A GLIMPSE OF THE NEW BUILDINGS FROM THE ESPLANADE

technology
review
Published by MIT

The Technology Review
Vol. XVII NOVEMBER, 1915 No. 8

STATUS OF THE NEW BUILDINGS

A little insight into the unusual facilities of the New Laboratories—Laboratory work on a commercial scale a feature

Since the last article relating to the buildings in Cambridge, marked progress has been made and the buildings are rapidly assuming a more completed and finished appearance. Within a few days the main group will have reached a stage where outward signs of construction will have been removed.

The completion of the dome of the Library Building and the removal of the staging and towers used in its construction has brought about a distinct change in the aspect of the entire group. From the Boston side of the Charles River this dome of limestone, flanked on either side by great pilastered wings, is a most imposing feature. Viewed from a high vantage point such as the Custom House Tower the new buildings are the dominating feature of the Cambridge district, and even from certain points of the Harvard Stadium the dome shows clear and sharp above the surrounding structures. This dome is constructed of reinforced concrete faced with limestone and rises to an elevation of approximately 150 feet above the general street level, or practically the height of a twelve-story office building.

Back of the main group and beyond the tracks at the rear of the Institute property, the Power House, which will supply steam heat and electricity for the whole development, is rapidly nearing completion and will supply what heat is needed during the coming winter for construction purposes. The stack is one of the largest and highest in Cambridge, rising 180 feet above its base and having a maximum diameter of 18 feet.

The various units comprising this group have been so well proportioned by the architect that it is difficult to get a proper conception of the area and size of the group from figures or plans; and

even now, when the work of construction is rapidly nearing completion, few people realize its magnitude and extent.

The over-all dimensions of the group are 800 feet from east to west and 700 feet from north to south, so that the area covered and enclosed by the group is approximately thirteen acres. This ground area would easily contain two Harvard stadiums side by side with sufficient space left over for the new Boston Dry Dock.

The possibility of changing the purposes for which the various buildings may be used as the Institute expands and different departments develop in the future made it advisable to keep the frame as nearly the same throughout as possible, avoiding special construction where such work was not absolutely necessary. This feature of the design will be appreciated when the future growth of the Institute requires more space and perhaps the removal of older departments to other sections of the building.

The design of the buildings calls for two general types of column spacing; one having two rows of interior columns, with corridor between leaving room for offices, class room or small lecture rooms on both sides; the other having a single row of interior columns, leaving room for corridors or offices and small class rooms on one side and space for lecture rooms or laboratories on the other or wide laboratories on both sides. With either type of frame it will be possible to throw the full width of the building into one large room for drafting or laboratory purposes.

The completed buildings will contain some 600 rooms ranging in size from small offices approximately 13 feet by 15 feet in dimension to the large main lecture room in the Library Building which will accommodate 500 students at one time.

As the visitor or student approaches the new Institute from the Charles River Esplanade entrance he will find the department of civil engineering in the two buildings forming the Esplanade and Massachusetts avenue sides of the minor court on his left. The department of general studies he will find in the corresponding buildings on the opposite side of the main court. The departments of mechanical engineering, hydraulic engineering, applied sciences and naval architecture will be provided for in the buildings forming the north side of the minor court and the adjoining building forming the Massachusetts avenue side of the main court. The departments of chemistry and geology have been assigned space in the corresponding buildings on the opposite side of

VIEW FROM THE ESPLANADE LOOKING WEST INTO THE GREAT COURT

VIEW FROM CORNER OF MASSACHUSETTS AVE. AND THE ESPLANADE

the main court and the department of physics has been given space in one of the two small buildings flanking the Library Building on the right and forming part of the base of the large U. The department of electrical engineering has been provided for in the central building, called the Library Building owing to the fact that the library is to be located on the top floor, and will overrun into the unit forming the east side of the base of the main court. Biology will also be taken care of in the central unit, and the administrative offices of the Institute, including the offices of the President and the bursar will be located in the building flanking the Library Building on the Massachusetts avenue side and facing the main court. The department of mining will be provided for in two buildings to be constructed adjoining the northeast corner of the group.

The athletic field and grandstand are located in the northeast corner of the property considerably to the rear of the locations selected for the dormitories.

Ample facilities have been made throughout for drafting rooms, these being located mostly on the top floors of the buildings forming the sides of the minor courts although large drafting rooms have been provided in other buildings where necessary.

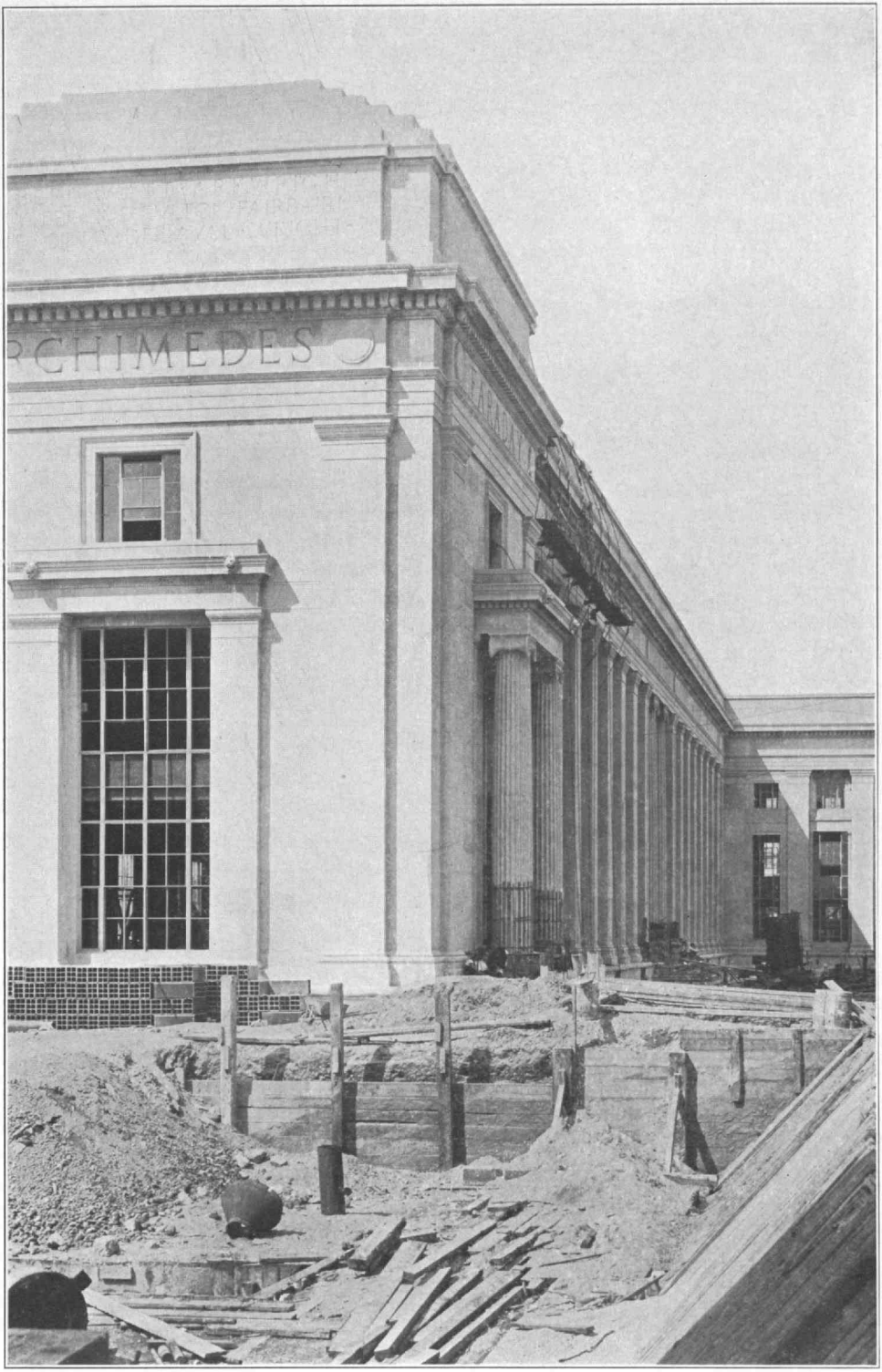
One of the most interesting features of the new buildings will be the Hydraulic Laboratory, located in the building forming the Massachusetts avenue side of the main court. The design of this laboratory has received a great deal of study from the Faculty and many prominent hydraulic engineers and it is believed that it will be superior in arrangement and equipment to that of any other educational institution in the country. A large concrete pipe intake has been constructed to take water from the Charles River basin to the Power House, and the laboratory will be supplied from this line. From the intake the water will flow into large circulating canals in the basement of the building from which point it is pumped through a Venturi tube into an open steel flume located on the second floor. From this flume it will flow through a steel penstock provided with openings for water wheels. A concrete draft tube will be constructed, connected with the lower end of the penstock, and from this draft tube the water will be discharged through sluice gates or over weirs back into the circulating canal. The capacity of this hydraulic system, including the circulating canals and the adjoining steam laboratory, is

250,000 gallons and it is constructed throughout with a view to enabling precise experiments in flowage and hydraulic work. This laboratory is also equipped with a well, located in the basement and extending to a depth of 21 feet below the basin level that will provide for graduated suction heads for pumps. All of the common means for measuring flow rates and quantities are provided, including Venturi meters, submerged orifices, calibrated and weighing tanks. Pressure pumps and tanks provide air and water pressure for the operation of Pelton wheels and simulating high head conditions. The laboratory contains provisions for the development of the power from 22,000 gallons of water per minute, operating at a natural head of 25 feet, and an artificial head of 575 feet can be obtained. Ample size of water ways makes possible the solution of commercial problems under laboratory conditions.

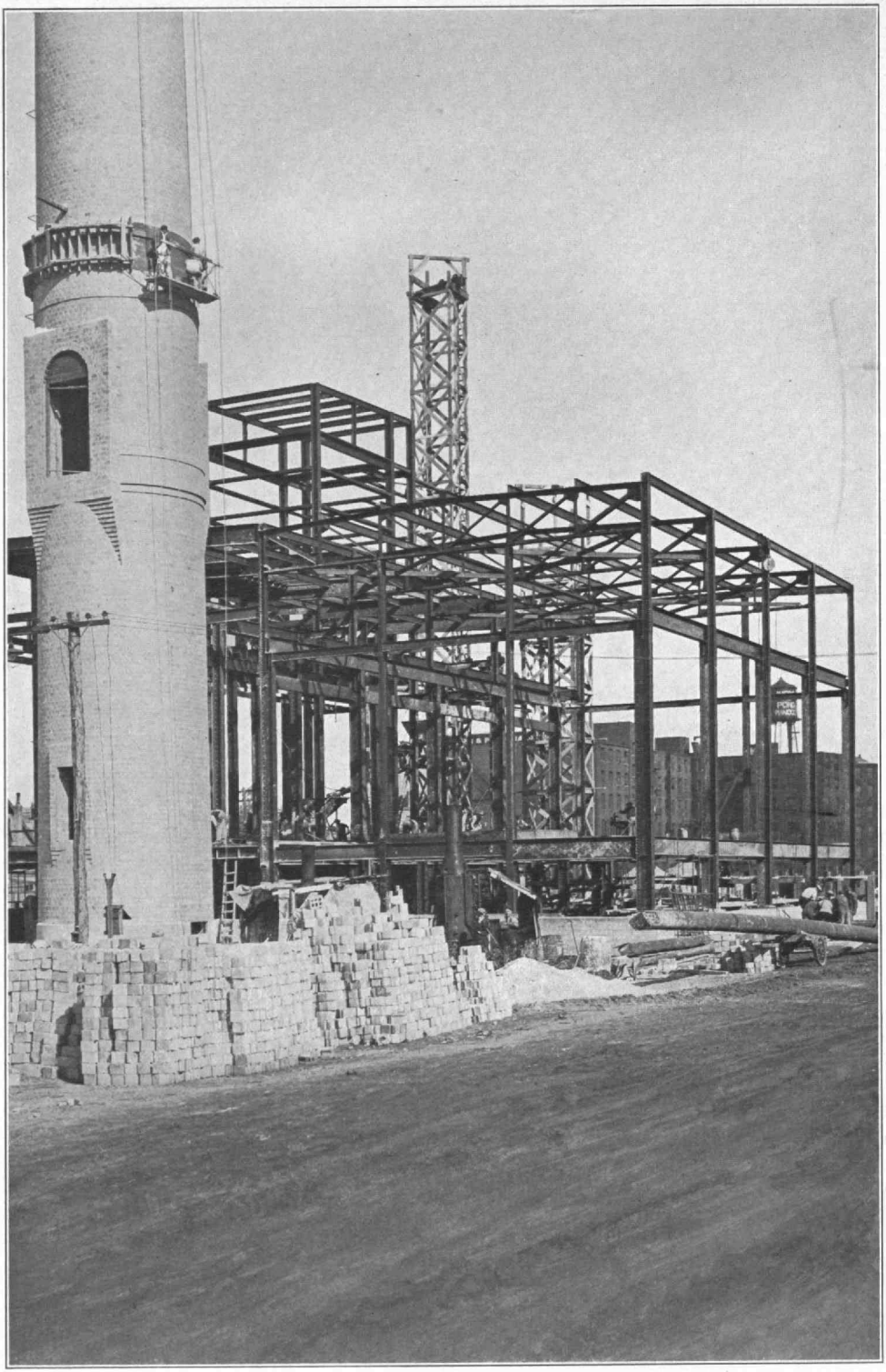
The Steam Laboratory, adjoining the Hydraulic Laboratory, has many features in common with it, such as facilities for pump testing, circulation of condensing water, and the service of a traveling three-motor crane of ten-ton capacity. The old engines from Trinity place will be aligned under this crane in a systematic manner for accomplishing a wide range of experiments. These old engines will be reinforced by a modern 30-horsepower Corliss engine. The settings of these engines are so constructed that they can be superseded temporarily or permanently by other types. The power developed in this laboratory will be absorbed by generators, dynometer brakes or water rheostats, and the exhaust steam when not condensed will be returned to the heating system.

The Mechanical Laboratory will be completely equipped with modern devices, including equipment for autogenous welding, babbiting and solder work, chipping, filing and heat treatment. This laboratory will include a complete installation of compressed air and with the numerous electrical outlets will permit of many refinements and efficiencies in the course of instruction.

Among the new equipment that will be provided for the department of applied mechanics will be a 300,000 pound vertical Universal type testing machine, three 60,000 pound vertical Olsen testing machines, and modern equipment for efficient research and heat treatment. The laboratories for work in cement, concrete and road materials will be much in advance of those in the old Institute.



WHERE THE DEPARTMENT OF MECHANICAL ENGINEERING WILL BE HOUSED



POWER HOUSE GOING UP ON VASSAR ST.

Laboratories for the departments of chemistry and physics will be located in the eastern half of the group and will occupy rooms extending either one half or the full width of the building. The outside walls of these laboratories will be given over to benches, shelves and radiators while partition space will be devoted to special apparatus and ventilating ducts. Special attention has been given to the ventilation of these laboratories, and the different kinds of gases from furnaces, etc., will be removed separately by fans located on the roof. All experiments which generate gases will be performed under down-draft hoods on the table tops, or enclosed exhausting hoods on the walls. These laboratories are fitted for work on a commercial scale and large modern apparatus is to be provided for advanced work on food, sugar, fuel, oil and gas and for qualitative and quantitative analyses. Laboratories are also provided for inorganic chemistry and geology, and electro-chemistry. The laboratories for optics, photography and photometry are also very complete and are located so as to permit of the following of the sun with heliostat for experiments with its rays. Space is provided for undergraduate instruction in the common branches of physics, mechanics, optics and heat.

The new laboratories for the electrical engineering department lose many of their familiar characteristics by the removal from the single story Lowell Building. The new laboratories will be quite distinct from the generating plant but will have improved facilities for departmental educational purposes. This department will contain a very complete local plant for the regeneration and transformation of current to be used for experimental purposes, and the design of the electrical distribution system is such that practically any known type of electrical machine or other device may be set upon the laboratory floors and tested or investigated with the current available. A new feature of this department will be the heavy current and machinery laboratory where direct current up to 6,000 ampères will be available with other facilities for the testing and investigation of all types of special machines. The laboratories are so arranged that ready access may be obtained to the large lecture room, and a special track has been provided in the floors for the wheeling, on specially constructed tables, of such heavy apparatus as it is necessary to have for practical demonstration. A small departmental lecture

room is also provided with numerous study and thesis rooms, each wired and piped conveniently for electrical research.

The department of biology and public health will have space assigned to it that will permit of large expansion. This space is nearly twice that of the area now occupied, the most notable improvement being in the Bacteriological Laboratory. At present, the students in bacteriology and industrial microbiology use one small room, while the new arrangement provides three separate laboratories for each of these courses, each of a greater capacity than that used at present for the combined courses.

Power for the generation of lighting, ventilating fans, laboratory use and direct steam for heating and power purposes will be generated in the Power House located at the rear of the main group of buildings. The initial boiler installation of this station will have a capacity of 1,800 horsepower which will provide sufficiently for the present buildings and for such extensions as may be made in the immediate future. The power capacity will be in the neighborhood of 1,500 kilowatts which will be distributed mostly as alternating current for lighting and laboratory purposes, although a small amount of direct current will be furnished for the Electrical Laboratory and for the motors attached to the ventilating fans. The buildings will be heated by low pressure steam, the returns being operated under the vacuum system; that is to say, the return piping and all radiators will be connected with vacuum pumps conveniently located throughout the building in order to maintain a pressure somewhat lower than the atmosphere. All exhaust steam from the turbines in the Power Station, wells, steam pumps and mechanical apparatus will be utilized as far as possible in the heating system. In general, semi-indirect lighting will be used in the class rooms, study rooms and laboratories in conjunction with direct lighting in the drafting rooms and other places where more intense light is necessary.

The orderly and systematic arrangement of equipment and facilities for experimental and research work, and the ample room provided for all departments will be in marked contrast to the confused and congested conditions which have necessarily prevailed in the old Institute buildings which have been outgrown for some years past.

A. L. Hartridge.

THE GREAT REUNION OF 1916

An event that will draw Tech men from all over the world—Elaborate arrangements are being made to entertain the multitude

The All-Technology reunion, which is to occur next June, has been looked forward to ever since 1914, the year when it naturally would have taken place. It was decided before that time to make the five-year reunions come in years that were in multiples of five, but several months before June, 1915, it became evident that the new buildings would not be completed at that time, and furthermore, the condition of business and the depression due to the war in Europe, prompted a further postponement until 1916, when the buildings will be waiting the final touches.

The reunion will occur Monday, Tuesday and Wednesday, June 12, 13 and 14 (the 13th being Commencement Day), and the scene will largely be set on the new site.

A general committee of six to take charge of the reunion has been appointed as follows: Charles A. Stone, '88, chairman; James W. Rollins, '78; Walter B. Snow, '82; Frederic H. Fay, '93; Merton L. Emerson, '04; I. W. Litchfield, '85, secretary.

A general program has already been made out and active work is in progress. This early activity indicates to some extent the scale upon which the reunion will be conducted. It is prompted by the knowledge that several thousand alumni will be in Boston for that event. The occasion marks not only the regular five-year reunion and the dedication of the new buildings, but the fiftieth anniversary of the opening of the Institute, which took place February 20, of this year. The dedicatory exercises are in the hands of a committee of the Corporation.

In order that the reunion plans may be fully disseminated and interest aroused in the reunion, each local alumni association will appoint one man to coöperate with the general reunion committee as far as his territory is concerned. In addition to this the classes will appoint one man in each of the larger centers to represent the class, and these class representatives, with the reunion committee

representative, will constitute a committee which will also make arrangements for transportation.

The full program for the reunion will be published in the January REVIEW.

The meeting of the Technology Clubs Associated will be held during this time, presided over by James W. Rollins, '78, and it is expected that every existing Technology association will be represented.

One particular feature of this reunion will be the fact that nearly every event is equally attractive to the women as to the men.

Delegates to the Council

The president and officers of the Alumni Association are very desirous of having the spirit of the Alumni Council conveyed to the various local associations. The bare report of its meetings does not convey this, and letters have therefore been sent to all the secretaries of local associations asking them to arrange to send local delegates to the Council meetings wherever possible or persuade members intending to visit Boston to go there at the time of a Council meeting, these delegates to be in addition to the regular representation on the Council. Officers of the association wish to entertain these special delegates at the dinner and the meeting, and will also be glad to arrange to have them go through the new buildings in Cambridge. The secretaries of associations have taken this matter up with interest and it is likely that there will be several delegates direct from local associations at the Council meetings this year.

The Council meetings for the rest of this year will be held November 29, and December 27.

Banquet Notice

Please do not forget that the annual alumni banquet occurs Saturday evening, January 8, 1916. The place has not yet been decided upon, but notice will be given when the ballots for officers of the association are sent out.

COUNCIL MEETINGS RESUMED

All-Technology Reunion Committee appointed — Nominating Committee reports — Plans for the new dormitories are presented — Tech Missionaries tell of their travels

Attendance at the Council meeting, held at the Engineers Club, October 25, was 60, and as usual the meeting was full of interest.

Professor George H. Barton, '79, as salad orator, told about his trip to Honolulu and meeting with the Technology club of that place.

The first business of the meeting was the appointment of a committee to take charge of the 1916 reunion in accordance with the vote of the Council in May. The chair appointed Charles A. Stone, '88, chairman; J. W. Rollins, '78; F. H. Fay, '93; Walter B. Snow, '82; Merton L. Emerson, '04; I. W. Litchfield, '85, secretary. He announced that there had been informal conferences with the President in regard to the date of the reunion, and it seemed likely that this would take place Monday, Tuesday and Wednesday, June 12, 13, 14, the 13th being graduation day at the Institute. This date is to be confirmed by the Corporation. It was voted that the committee thus appointed was to have full charge of the reunion, with power to add to its members, to arrange the program, and to appoint various committees necessary to carry on the work.

President Horn then called on J. P. Munroe, '82, chairman of the committee on dormitories. Mr. Munroe said that his committee had been appointed to see what could be done to secure funds for the building of dormitories, and that many meetings had been held, and there had been much discussion and investigation of this matter. The Institute authorities had been consulted and meetings had been held with representatives of the fraternities. He spoke of the splendid spirit exhibited by the fraternities and their desire to do the best thing for the Institute, regardless of their own interests. The announcement last June that two donors had given a large sum of money for the building of the dormitories had, to a considerable extent, solved the question. Mr. Munroe then read the following letter from Dr. Maclaurin.

On various occasions during the last few years I have voiced the opinion of the Executive Committee of the Corporation that the provision of dormitories was one of the most important elements in the large problem of establishing what is popularly spoken of as the "New Technology" on the banks of the Charles. There has been no change of view within the Committee as to the urgency of the need that has thus been expressed and it has always been the understanding that we should proceed at once with the erection of dormitories as soon as money was available for the purpose. Your committee and others set up by the Alumni Council have rendered most valuable aid by careful investigations as to the needs and by keeping the broad issues before those who are watching with special interest the progress of the Institute. In June last, I was happily in the position to announce that two benefactors had promised substantial sums to be used for the erection of dormitories and immediately after that the matter was placed in the hands of the Institute's architect together with material furnished by committees of the Alumni Council. It has taken a long time to get plans into a form that satisfies all our needs and to reconcile the somewhat conflicting demands of low cost to the student and appearance worthy of the Institute and of the standard that it has set in its educational buildings. We have not yet reached a complete solution of this problem, but I believe that we are very near it. We expect before the winter sets in to begin the erection of dormitories on the river front, costing about a quarter of a million dollars, and these will be ready for occupancy next fall.

I beg to tender to you and your associates the thanks of the Executive Committee for your helpful coöperation.

Mr. Munroe reported that the matter had been placed in the hands of the architect, who was following closely the suggestions of the alumni committee on student housing. He asked that the committee be discharged and allowed to put in a formal report. It was moved that the committee be discharged with thanks.

President Horn said that he would just make a short statement in regard to the Walker Memorial. A great deal of work had been done during the summer, and although many people had been away he thought that the work had got along wonderfully well. He said that there was nothing definite to report at this time, but he was confident that something definite would be reported at the November meeting.

Mr. Humphreys stated that the Tech button, which we have been using, was so much like the button used by the Society of Colonial Wars that, in the opinion of many alumni, it ought to be changed. He showed a design for a button containing more gray in the middle and very different from the button of the Society of Colonial Wars, recommending that it be adopted which was done.

The Nominating Committee reported as follows: President, for one year, Charles A. Stone, '88; vice-president, for two years,

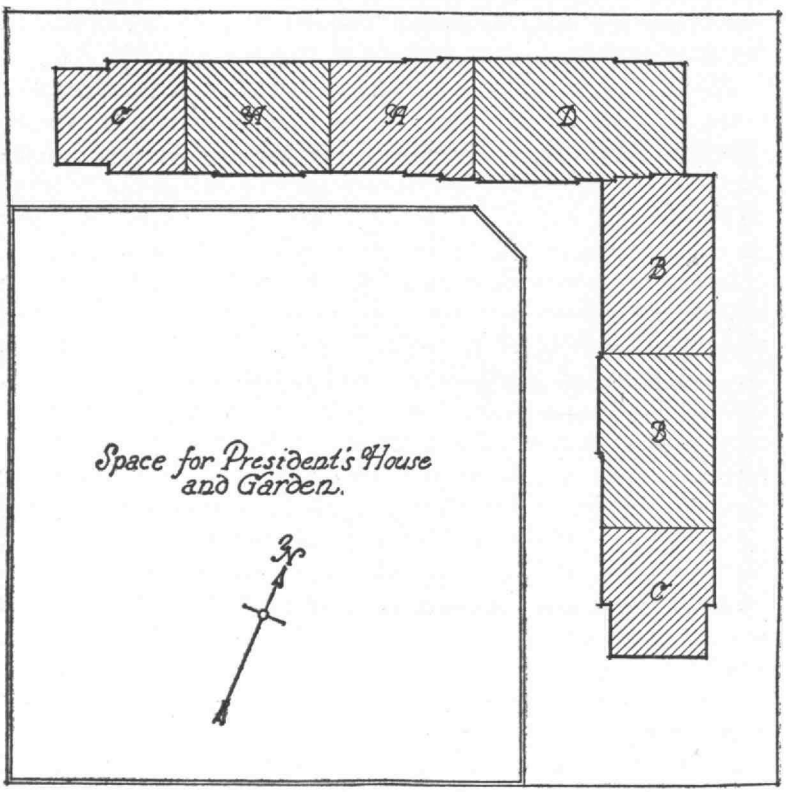
Joseph H. Knight, '96; secretary-treasurer, one year, Walter Humphreys, '97; executive committee, two years, Harold E. Kebbon, '12, Grosvenor D'W. Marcy, '05; representatives-at-large, two years, Frank H. Briggs, '81, Lester D. Gardner, '98, H. W. Geromanos, '02, William G. Snow, '88, Charles W. Whitmore, '08; term membership on the Corporation, Harry J. Carlson, '92, Henry J. Horn, '88, Morris Knowles, '91, Samuel J. Mixter, '75, William C. Potter, '97, William B. Thurber, '89.

The matter of the time of holding the Council meetings was taken up. Mr. Horn stated that some of the members thought it better to hold the meetings on the last Monday of the month instead of the fourth Monday. The suggested change was adopted by the Council, and the Council meetings for the remainder of the year at least will be held on the last Monday of the month.

Professor Charles E. Locke, '96, who made an extensive trip through the West, was next called upon. He said that he met about two hundred of the alumni, many of them individually. He had attended meetings in Denver, Salt Lake City, Butte, Seattle, San Francisco and Los Angeles, and hoped that the meetings had been as interesting to the men he had met as they were to him. He said that it was hard for us to realize here how eager the men, far distant from Boston, are to know what is going on at the Institute. All the meetings were informal and the talks brief. They all wanted to know about the new buildings, the coöperation with Harvard and the reunion. The message he has brought back to Boston is one of assurance of loyalty all along the line, and he said that he hoped the Council would do everything possible to hasten the day when the President will make his long promised trip to the Pacific Coast.

Professor H. W. Tyler, '84, who followed Professor Locke, told of his visit to the clubs at San Francisco and Seattle. He gave an interesting description of his visit to Professor Hale, '90, at the Mt. Wilson Observatory. Professor Tyler was unable to make connections with the Technology Club of Los Angeles, but was present at San Francisco on the 13th of July at a meeting of the Technology Club of Northern California. Here he met a pleasant gathering of twenty or twenty-five men, and the discussion covered a wide field. He tried to emphasize particularly the spirit and function of the Alumni Council, and also told about plans for the future and urged his hearers to be at the reunion in 1916. He earnestly

requested them to keep in touch with their representatives on the Council so that they would be informed of what the Council is doing. He said there were many Tech men on the staff of the University of California. The staff in the chemical department was largely composed of Tech men. The head of the architectural

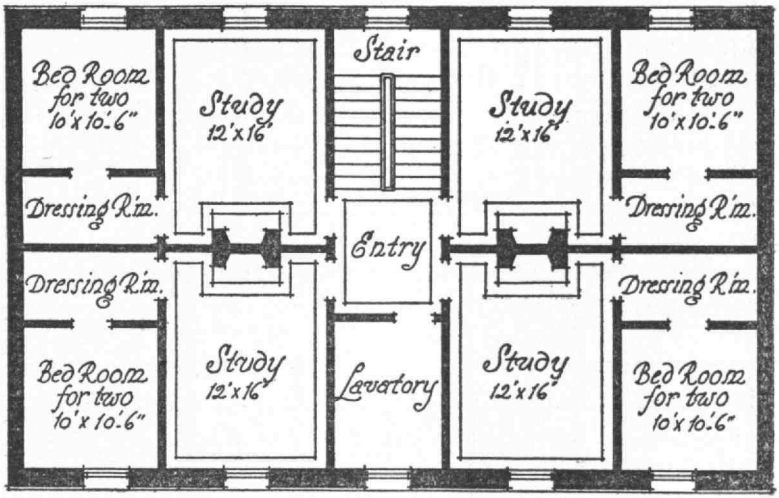


EASTERN END OF LOT ON ESPLANADE

department was John G. Howard, '86; Ernest A. Hersam, '91, is associate professor of metallurgy, and Charles G. Hyde, '96, is professor of sanitary engineering. He attended the August meeting of the San Francisco association, on which occasion Professor Dewey was also present. He also met a number of Tech men in Seattle.

Dr. Dewey spoke of the very enjoyable visit he had at San Fran-

cisco. He said the college spirit in the Far West does not compare with that of the East. The men on the coast do not keep in touch with their fellow alumni in any degree as they do here. There was great interest in Technology affairs, but a lack of knowledge of their associates. He emphasized the fact that there was much more needed than the chance trips of the alumni and professors, to bring the men together. He felt that it was extremely desirable that the President of the Institute should make such a trip West with two or three members of the Corporation,

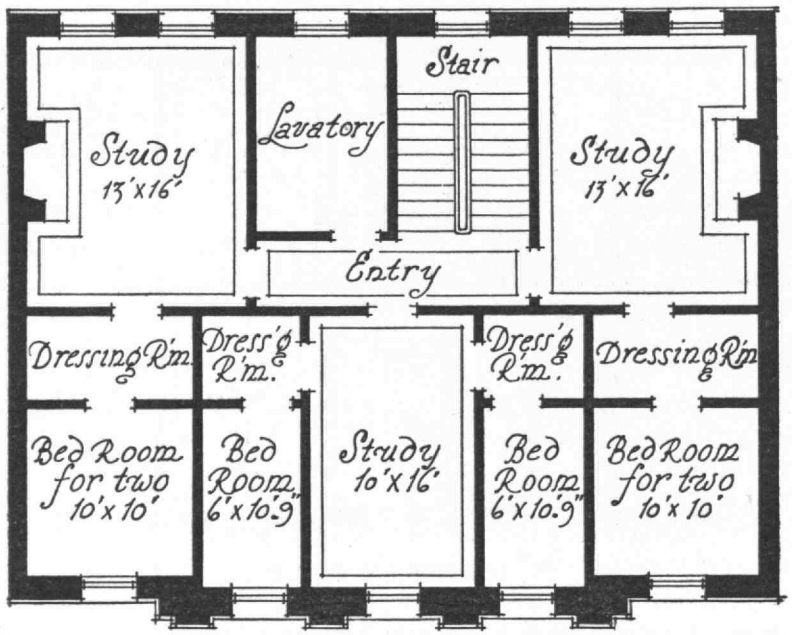


DORMITORY TYPE B

even at some expense, because he felt that such a trip would make an impression on the people, and it would not only make friends for the Institute but would bring the older alumni into touch with their Alma Mater and make them feel proud of it. Such a trip would secure a grand rallying of support which would be of great importance to Technology.

Mr. A. Farwell Bemis, '93, was then called on to describe the arrangement of the dormitories, which are to be built on the eastern end of the new Tech property in Cambridge, along the Esplanade, buildings which are made possible by the recent splendid gift by two donors. It is planned to locate the dormitories along the northern and eastern sides of the lot, one end resting on the Es-

planade, the President's grounds and house to occupy the rest of the lot. The gift of the house for the President was announced at the Pop Concert at the same time as the gift for the dormitories, the donors being Charles A. Stone, '88, and Edwin S. Webster, '88. This arrangement of the dormitories gives a view of the Charles River basin from nearly every suite. Mr. Bemis stated that the plans for these dormitories were nearly ready for consideration. The buildings are to be three stories high with a total length of



DORMITORY TYPE A

about 350 feet, and 35 feet wide. On the ends it is planned to have especially arranged sections where fraternities can locate. Between them are five regular dormitory sections. The fraternity houses will be provided with a social room and dining room on the first floor, the kitchen and servants' quarters being in the basement. In the other sections the basement will be used for storage, etc., and on the first floor will be single rooms, while on the second and third floors will be suites arranged as shown in the accompanying illustrations. This apportionment conforms with the best practice of other colleges, and is in line with the report of the alumni stu-

dent housing committee made two or three years ago. Almost every suite will have sunshine during some portion of the day. There are two types of dormitory units, as shown in the cuts. Those along the eastern side of the lot will have the sun on the east side in the morning and on the west in the afternoon, and have been arranged with sleeping rooms on both sides. Those on the northern side of the lot will have the sun only on the south side, and most of the bedrooms have been placed on this side. The bedrooms will have very large windows and these can be opened at night so that the bedrooms are practically open air sleeping porches. It will be noticed that the plan is very compact, leaving no waste room and yet is very practical. Most of the suites have fireplaces. The fire ordinances of Cambridge are rather exacting, and it was somewhat difficult to arrange the units as we would desire and yet conform with the laws. This, however, has been done. Either a fire door will be placed between the sections or they will be connected by iron balconies on the outside of the buildings. It is estimated that the dormitories will house 200 men. Mr. Bemis thought that this would take care of perhaps one quarter of the men who would like to live in these dormitories. Of course the construction is absolutely fireproof.

During the talk Prof. Charles F. Park, '92, inquired what plan, if any, had been made for allotting the two available buildings to fraternities. Mr. Bemis said that this might be a difficult question to solve, and it would have to be taken up by a committee which he would propose later on. He also said that besides the fraternity matter there is a question whether the students shall have full charge of the dormitories or whether the Institute will go to the other extreme and put proctors in every section. In between was a combination of both features which might be practical.

Mr. Charles W. Eaton, '85, asked what arrangements had been made for feeding the students who lived on the site. Mr. Bemis said that Dr. Maclaurin had stated that the Institute must make some provision on the site, either permanent or temporary.

Mr. Bemis then moved that a committee of three or five be appointed by the President to study questions relating to the administration of the proposed dormitories and report to the Council, not later than the December meeting, a recommendation covering the principal problems involved. This motion was carried.

MEMBER OF THE FIRST FACULTY

Death of Professor Watson, first teacher of Mechanical Engineering at the Institute—An early member of the Society of Arts.

Professor William Watson, a member of the first Faculty of the Massachusetts Institute of Technology, died at his home on Marlborough street, September 30, 1915.

He was born in Nantucket, January 19, 1834, the son of William and Mary (Macy) Watson, and was graduated from Harvard in the class of 1857 with the degree of B. S. He was particularly proficient in mathematics, being the winner of the Boyden prize in that science. He first became instructor in mathematics at Harvard, afterwards taking a course at the École Nationale des Ponts et Chaussées in Paris. He became a lecturer at Harvard University upon his return to this country. During his stay abroad, he devoted much attention to technical education and was particularly fitted to become a member of the staff of the Institute of Technology when its doors were opened in 1865, and where he remained as professor of mechanical engineering and descriptive geometry until 1873.

In 1867 he attended the French Universal Exhibition, and during his stay in Paris he took lessons in modeling in plaster. He also procured a set of models to illustrate the instruction in stereotomy with sets of modeling tools; and on his return, in connection with his lectures on that subject, he introduced for the first time in America, the actual construction in plaster of problems occurring in masonry, as doorways, groined and cloistered arches, domes, staircases, etc. Thus, when the appropriate drawings were finished, the students, supplied with the proper tools and pieces of rough plaster, were required to make the objects themselves by means of patterns cut from their own drawings.

He also took advantage of this visit to Europe to spend some time in Carlsruhe, where he prepared lithographic notes for his lectures on the elasticity and resistance of materials.

In 1869 he made another visit to Europe and brought home collections of models for instruction in descriptive geometry and

PROFESSOR WILLIAM WATSON

mechanism, with valuable drawings from the Polytechnic School at Carlsruhe.

Professor Watson was United States commissioner, in 1873, to the Vienna Exposition, and he served as a member of the International Jury of the Paris Exposition in 1878. He had been honorary president of the Paris Congress of Architects and vice-president of the International Congress of Hygiene in 1878; also honorary president of the engineering section of the French Association for the Advancement of Science, serving several terms, and was vice-president of the International Congress of Construction in 1889.

He was a member of the French National Academy at Cherbourg; French Society of Civil Engineers, and the American society of the same order, as well as the American Society of Mechanical Engineers. He was a fellow of the American Academy of Arts and Sciences, member of the American Association for the Advancement of Science, the Colonial Society of Massachusetts, St. Botolph Club, the Boston Athletic Association, the Round Table Club, Mathematical Club and other organizations. He was the author of many notable works on technical education and science, engineering, architecture and other subjects. He married, in 1873, Miss Margaret Fiske, daughter of Augustus H. Fiske of Boston.

In the early days of the Institute there were no books on mechanical engineering printed in this country, whatever books there were on this subject being printed in French. As Professor Watson has often stated, the Society of Arts of the Institute, which began its work even before the doors were open to students, was the principal means of disseminating scientific information. Professor Watson was an active member of this body. It would be difficult to measure the usefulness of the Society of Arts at this time when practically every new invention and development in science was brought to the attention of its members with the publication of the *Technology Quarterly*, which was the official journal of the society. This special knowledge was disseminated to scientific institutions and individuals throughout the country. Professor Watson was a life member of the society and probably the oldest member on its rolls.

NOMINATING COMMITTEE REPORTS

List of candidates for officers of Alumni Association and term membership on the Corporation with brief sketches

Nominations for officers of the Alumni Association and term membership on the Corporation have been reported by the nominating committee, and ballots will go out November 20. The polls will close in Boston, December 20. Following are the nominations: for president (one year), Charles A. Stone, '88; vice-president (two years), Joseph H. Knight, '96; secretary-treasurer (one year), Walter Humphreys, '97; members of the executive committee (two years), Harold E. Kebbon, '12, Grosvenor D'W. Marcy, '05; for representatives-at-large on the Council (two years), Frank H. Briggs, '81, Lester D. Gardner, '98, H. W. Geromanos, '02, William G. Snow, '88, Charles W. Whitmore, '08; for term membership on the Corporation (five years), Harry J. Carlson, '92, Henry J. Horn, '88, Morris Knowles, '91, Samuel J. Mixter, '75, William C. Potter, '97, William B. Thurber, '89.

The three names receiving the largest number of votes will be submitted to the nominating committee of the Corporation.

Following are sketches of the candidates:

Harry John Carlson, '92. Student in architecture, 1889–91. Architect with firm of Coolidge & Carlson, 89 State street, Boston, Mass. Residence, Bishopsgate road, Newton Center, Mass.

Studied in Paris, Atelier Duray, and in offices of Cass Gilbert and McKim, Mead & White; studied building as member of firm, Sampson & Co.; lectured seven years at Massachusetts Normal Art School (while practising architecture) on the "History of Architecture and Building Construction." Practiced architecture at first independently, but for the last thirteen years as member of the firm of Coolidge & Carlson.

Built: New dormitories at Wellesley College, Chapel, Bates College, Library, Hamilton College, Country Day School, Boston, Gymnasium, Thornton Academy, Normal and Latin Group, Boston, and other high schools and schools, consulting and designing architects Berry School, Rome, and Bradford Academy—as well as a general practice, churches, business buildings, etc.

Member of Boston Society of Architects; fellow of American Institute of Architects; trustee of Newton Center Savings Bank; visiting committee architectural department, Harvard College. To lecture, 1916, M. I. T., on Building Superintendence.

Past secretary and member of Executive Committee, Boston Society of Architects; committee member of the Municipal and Metropolitan Committee of the Boston Chamber of Commerce.

One of the three architectural advisers to President Maclaurin in regard to location for new Technology buildings.

Henry John Horn, '88. Graduate in civil engineering. Residence, 283 Tappan street, Brookline, Mass. Engaged in special railroad work.

For five years after graduation was in engineering department, starting with assistant civil engineer, Chicago & Great Western, Maintenance of Way Department. Entered the service of the Northern Pacific in 1889 and held various positions in the engineering department of that road, entering the operating department in 1893 as supervisor of bridges and buildings of the Minnesota Division. Division superintendent in 1897, assistant general superintendent in charge of the territory Missouri River to Spokane in 1902. General manager of the coal department of the Northwestern Improvement Company in charge of mining and marketing coal in Montana and Washington in 1903. General manager of the Northern Pacific in charge of operating and maintenance in 1904. General manager for C. Gotzian & Company, 1908–09. Assistant general manager on the Burlington Lines west of the Missouri River, 1910.

In December, 1910, appointed assistant to the president of the New York, New Haven & Hartford; vice-president in charge of operating in the New York, New Haven & Hartford and Central New England railroads, January, 1912. In June jurisdiction was extended to include the Boston & Maine Railroad; vice-president in charge of the operating and engineering department of the Boston & Maine, 1913. Left the service of that road in 1913, since which time has been engaged in special railroad work.

Member of Technology Clubs in New York and Boston; Engineers Club, Boston; Boston Yacht Club, etc.

Vice-president of the Alumni Association in 1914, president in 1915.

Morris Knowles, '91. Graduate in civil engineering. Consulting engineer. Residence, Pittsburgh, Pa.

After serving some years as assistant, resident and chief engineer of numerous water works systems, including the building of the filtration plant and improvements to the water works system of the city of Pittsburgh, Pa., has maintained a private office as consulting engineer since 1910, specializing in hydraulic and sanitary subjects. Also director in charge of Department of Sanitary Engineering and Evening Course in the Valuation of Public Utilities at the University of Pittsburgh.

Member of Pittsburgh Civic Commission; Engineering and Executive Committees of Pittsburgh Flood Commission; American Society of Civil Engineers; American Society of Mechanical Engineers; *Verein Deutscher Ingenieure*, Berlin; Canadian Society of Civil Engineers; Boston Society of Civil Engineers; American Academy of Political and Social Science; American Economic Association; National Municipal League; Duquesne Club, Pittsburgh; University Club, Pittsburgh; University Club, Philadelphia; Cosmos Club, Washington, D. C.

Associate editor of Pittsburgh Flood Commission Report, and author of numerous technical and professional papers.

Member of Technology Club, New York; Technology Club, Boston; former president Pittsburgh Association; president, Technology Clubs Associated, 1914–15.

Samuel Jason Mixter, M. D., '75. Graduate in physics. Physician, 180 Marlborough street, Boston, Mass.

Graduated at Harvard Medical School; one year house officer, Massachusetts General Hospital; two years medical study in Vienna. Formerly surgeon to outpatients and visiting surgeon, Massachusetts General Hospital; surgeon to outpatients and visiting surgeon, Carney Hospital; surgeon, Boston Dispensary; now consulting surgeon, Massachusetts General Hospital, consulting surgeon, Massachusetts Charitable Eye and Ear Infirmary.

Member of the Massachusetts Medical Society, American Medical Association, American Surgical Association, Société Internationale de Chirurgie, American Academy Arts and Sciences, Boston Society Medical Improvement, American Association Advance of Sciences; first lieutenant United States Army Medical Reserve Corps; St. Botolph Club; Country Club; Eastern Yacht Club; Army and Navy Club, Washington; Harvard Club, Boston and New York.

Author of papers relating to surgical subjects.

Former president of the Alumni Association of the Massachusetts Institute of Technology.

Life member of the Technology Club, Boston.

William Chapman Potter, '97. Graduate in mining engineering and metallurgy. Vice-president of the Guaranty Trust Company of New York, 140 Broadway, New York, N. Y. Residence, 177 East 71st street, New York, N. Y.

Five years mining engineer in Colorado, Montana and California; two years mining engineer, Atchison, Topeka & Santa Fé Railway Company; eight years general manager, Guggenheim Exploration Company and the American Smelting & Refining Company; one year president of the Intercontinental Rubber Company.

Member of various clubs in New York City, such as the Metropolitan Club, Piping Rock Club, New York Athletic Club.

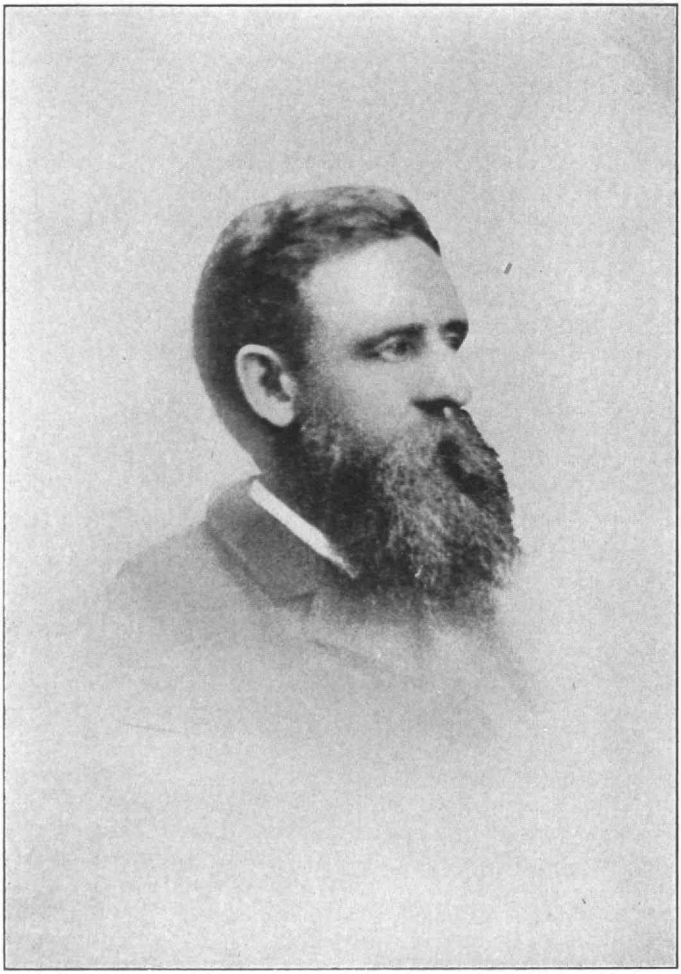
At present member of Finance Committee of Technology Club of New York.

William Bartlett Thurber, '89. Graduate in general studies. With Walter Baker & Company, Ltd., Milton, Mass.

Eight years with the New England Telephone & Telegraph Company as division superintendent in various parts of their territory, and seventeen years with Walter Baker & Company, Ltd.

Member of various social, political and professional organizations.

President of the class of '89; member of the original Walker Memorial Committee; treasurer of the Corporation of the Institute and member of the Executive Committee of the Corporation for two years.



PROFESSOR CHARLES HALLET WING

PROFESSOR WING PASSES AWAY

He planned the Kidder Laboratories, and was connected with the Faculty for ten years—His educational philanthropy in the South

Professor Charles Hallet Wing, who for ten years was a member of the Faculty of the Massachusetts Institute of Technology, died suddenly at his home in Boston on September 13, 1915. Professor Wing was the son of Benjamin Franklin and Adeline (Hallet) Wing, and was born in Boston August 5, 1836. He graduated from the Harvard Lawrence Scientific School and was a member of the American Academy of Arts and Sciences and other scientific societies. He was appointed professor of chemistry in Cornell University in 1870, resigning that position in 1874 to accept the chair of professor of analytical chemistry at the Institute. He planned the Kidder Chemical Laboratories, introducing many new features, and made them a model for their time. His teaching was characterized by its thoroughness and close personal contact with the students, and, though he insisted on a high standard of scholarship and a strict attention to work, they found him always ready to help and to encourage, while his genial manner never failed to win their confidence and respect.

In 1884 Professor Wing resigned his position, and in 1885 went to live in Ledger, Mitchell County, N. C. Here among the mountaineers Professor Wing felt that he did his best work. When he came few of them could either read or write, so his first step was to build and furnish a schoolhouse for which he provided two teachers. The building had a manual training shop in the basement, and accommodated one hundred and twenty pupils, but the first year two hundred and fifty attended, varying in age from six years to forty. As he was fond of the use of tools and a natural mechanic, he was able to give instruction in his carpenter and blacksmith shops as well as to supervise the other work of the school.

He also started there the first free public library in the state. This library contains over twelve thousand volumes, most of which

were donated by the personal solicitation of Professor Wing. From there cases of books are sent to the more isolated parts of the county. Over the library is a large hall which is used for social and civic meetings. Nearby is a cottage for the librarian who was trained to bind books in addition to his other duties. The expense of building and conducting both school and library was paid by Professor Wing. His own house, built with the aid of the mountaineers, was equipped with modern conveniences, including electricity, and to it his neighbors were freely invited. Here his wife instructed the young women under her in domestic work and the general care and management of a home.

Several years ago, when his physical strength began to fail, he donated the school and library to the county and moved to Boston. Here he equipped a work shop where he spent much of his time. One of the last things he made was an apparatus for testing the lubricating power of oils.

A lover of music, a student of languages, delighting in the society of his friends, his last years were passed busily and happily.

THOMAS E. POPE, '71.

Tech Missionaries from Boston

During the present year a very large number of Tech men from the Hub have visited and addressed local associations. At the request of the field manager, men who contemplate a trip have given this information and arrangements have been made for luncheons, dinners, etc., in the cities visited.

During this fall a great many Tech men will make visits to cities where there are local associations, and the field manager will be under many obligations if he can be notified of these visits if possible two weeks ahead of time so that proper arrangements can be made.

Death of Frank West Rollins

Just before the forms of the REVIEW closed, alumni were shocked to learn of the sudden death of Frank W. Rollins, '81, of Concord, N. H., a former governor of New Hampshire and president of the firm of E. H. Rollins and Sons, Bankers, of Boston, New York, Chicago, Denver, and San Francisco. He died October 27.

A full account of his life will be given in the TECHNOLOGY REVIEW in January.

TECHNOLOGY IN CALIFORNIA

New era of prosperity inaugurated by the San Francisco Club—several interesting meetings and a number of Speakers from Boston

The Tech men of San Francisco have had a most successful and strenuous summer. In order to entertain visiting Tech men the Technology Association of Northern California decided upon monthly dinners during the Exposition period.

The attractions of the Exposition, however, must have dimmed our attractions for we have been able to obtain only a very few Tech men out of the 15,000,000 attendance at the Exposition to date—but those that we have enticed to our dinners have well repaid our leaving home and eating strange food.

The April, May and June dinners were held at the University of California Club and I believe have already been described. At the June dinner John R. Brownell, '01, was elected president for the present year and has officiated at all following dinners with great success.

The July dinner was held at the Engineers Club and made famous by the appearance of Professor Tyler, '84, and his green bag. Professor Tyler's genial personality pervaded the meeting and he generously gave us our first comprehensive idea of the present Technology situation in the East.

The August dinner at the Engineers Club was honored by Professors Dewey and Locke, '96, and Mr. Allen Hazen, '88, of New York. Professor Tyler, who during the past month had been giving a course at the University of California, dropped in on us again to recommend the mountain climbing possibilities of California. Professor Dewey and Professor Locke both gave interesting talks on Technology and the gradual changing advancement of their particular courses. Mr. Hazen dwelt seriously upon the cost of the present war among his brother engineers in Europe and also indicated the great responsibility of the trained scientist and engineer in the present struggle.

The next dinner was held August 22, during the week of the International Engineering Congress, at the Clift Hotel. This dinner was advertised west of the Rockies among Tech men with the idea of making it representative of the western alumni. The

guests of honor were Professor Richards, '68, and Professor Swain, '77. Professor Richards gave a delightful talk on the trials and successes of Technology's growth since the beginning. Professor Swain in his brief and to the point address placed himself strong with the native sons by claiming San Francisco as his birthplace. Mr. W. H. Shockley, '75, gave his experiences as a young engineer and the value of scientific management in such an interesting manner, that we determined to hear his paper at the Engineering Congress—until we read its title. Another speaker was Mr. A. W. Sawyer, '72, who stirred our enthusiasm with tales of the old days. A description of the dinner would not be complete without noting Mr. E. F. Kriegsman's ('05) oration on and his unveiling of—"Beau-ti-ful Stel-la!" Following is the list by classes of those that attended the dinner:

Prof. R. H. Richards, '68, Boston, Mass.; A. W. Sawyer, '69, Santa Barbara, Calif.; W. H. Shockley, '75, Palo Alto, Calif.; C. W. Goodale, '75, Butte, Mont.; Prof. G. F. Swain, '77, Boston, Mass.; F. F. Barbour, '87, San Francisco, Calif.; H. A. Wilcox, '87, Pasadena, Calif.; Allen Hazen, '88, New York; W. E. Leland, '91, San Francisco, Calif.; Leonard Metcalf, '92, Boston, Mass.; Murray Warner, '92, San Francisco, Calif.; J. B. Lukes, '92, San Francisco, Calif.; F. W. Harvey, '93, Galt, Calif.; W. A. Clapp, '93, Angel Island, Calif.; A. Sperry, '94, San Francisco, Calif.; A. J. Bowie, '96, San Francisco, Calif.; Prof. C. G. Hyde, '96, Berkeley, Calif.; A. B. Foote, '99, Grass Valley, Calif.; H. C. Marcus, '01, San Francisco, Calif.; J. R. Brownell, '01, San Francisco, Calif.; L. Miller, '01, San Francisco, Calif.; H. W. Stebbins, '02, Palo Alto, Calif.; G. E. Sibbert, '03, Pittsburg, Calif.; P. M. Paine, '04, Taft, Calif.; G. E. Atkins, '04, San Francisco, Calif.; G. R. Gaenslen, '04, San Antonio, Texas; Selby Haar, '04, New York; E. F. Kriegsman, '05, San Francisco, Calif.; F. S. Phelps, '06, San Francisco, Calif.; R. L. Rice, '06, Los Angeles, Calif.; C. F. Willis, '06, Tuscan, Arizona; W. W. Karnan, '08, San Francisco, Calif.; G. D. Whittle, '08, Sacramento, Calif.; E. A. Hunt '09, Los Angeles, Calif.; W. H. Berg, '09, Cottage Grove, Oregon; H. Griswold, '10, Berkeley, Calif.; M. C. Halsey, '10, Los Angeles, Calif.; H. F. Clark, '12, San Francisco, Calif.

The next dinner will be held November 9 at the Engineers Club, San Francisco, 6.45 p. m.

WALTER H. TRASK, JR., '06.

WHEN WE WERE FRESHMEN

Reminiscences of serious or humorous experiences of Alumni during their student days at the Institute

The request for a page or two on this topic has been the cause of considerable procrastination on my part for the reason that I can't seem to remember that anything ever really happened in that momentous year. The subject has been so deftly and wittily handled by others who actually seem to have lived and enjoyed themselves during that period that my own reminiscences would appear dull indeed in comparison. If nations which have no history are happy, I should have been the merriest of mortals, but I do not seem even to remember any such state of mind. To be humorous about those early days is impossible, but by hard thinking I can conjure up from oblivion some dimly visible images of our surroundings in the "*année terrible.*"

First, I seem to see looming darkly through the haze of memory the imposing façade of the Rogers Building with its oval windows which in some subconscious way always seemed to me like eyes which penetrated all my shortcomings in grasping the iron propaganda of mathematics which was laid down in the grim and dusty regions behind their unsympathetic panes. I seem to recall waiting in line to get books and umbrellas from an uncommunicative lady, known as "Birdie in the cage," and a long room on the first floor with bookcases lined with Agricultural Reports, known for some occult reason as the "Freshman Reading Room," though the only reading ever done there was by homeless youths who studied the Tabular View between their mouthfuls of apples and pie and discussed "what they would have next hour." Especially do I recall the difficulties experienced by one student in negotiating with the limited facilities that the place afforded, a particularly soft triangle of squash pie which formed an essential portion of his daily sustenance and whose safe handling ever remained to him an unsolved problem. The ugly and bare recitation rooms of Rogers got on my nerves, and I always found it a relief to go to the "New Building," so called which somehow seemed more friendly and homelike, perhaps only because newer and cleaner, but prob-

ably because farther removed from that dreaded danger zone, the secretary's office. It seemed to my youthful mind that ugliness must be a sort of Spartan attribute of science, and that knowledge had to be divested of all attractiveness in order to be real. Later on I came to know better and found that those austere dignitaries who dealt in x's and Π's were actually human and had homes and families, but at that time it did not seem possible.

In those early days there was so decided a lack of the human element about the Institute that I generally fled as soon as possible after the clock came around to 4.15, and rarely got beyond thinking of it as a breeding place for imminent F's and FF's which I was to utilize my entire strength to avoid, else my sojourn in that purgatory of pessimism, known as the freshman class, might be indefinitely prolonged.

One or two rays of light illumine the memory of those anxious days. William Cook, an instructor in freshman French, who was accidentally shot while gunning during the following summer, was one of those who had the faculty of making study under him a pleasure, as were, indeed, most of the instructors with whom I came in immediate contact, while Mrs. Stinson of the stockroom in the chemical laboratory easily qualified as the sunshine of that dismal abode.

The somewhat unmilitary figure of General Moore, with his black derby hat, also evokes a feeling of pleasure and in these days of talk of "preparedness" I am glad that I progressed so far in the art of warfare as to know how to count fours and "order arms."

Discussions as to the comparative merits of the "Café Waquoit" and the "Café Howland" and the intrinsic values of the twenty-one meal tickets dispensed at those hostelries, also served to beguile some of the interims. A few years later, in the Latin Quarter of Paris, I met a French student who deserted our pension in the Rue de Seine because, as he said, "here you only get six prunes for dessert, and at No. 66 they give you seven." The bill of fare at these restaurants underwent no less searching a scrutiny. The first-named establishment possessed a cat which always sat in the show window and for which we invariably looked anxiously before entering. If Pussy still held the fort, all was safe and we went in, but if for any reason she was not in sight we sought another lunching place, possibly the carpeted salons of the "Providence Depot."

Once I was invited into the architectural department of whose

delights I hoped some time to be a participant. A sophomore showed me his highly colored detail drawing of some "Eaves." The detail was wrong, the color was bad and the lettering beyond measure outrageous, but it looked to me like a full-size detail of the pearly gates and I wondered if I would ever be able to emulate so masterful a production, or be worthy to sit at the feet of "Letty" and work on those wonderful renderings.

Institute life only really began for me in the sophomore year, but I often think now how little I then realized Letang's unselfish devotion to his pupils and the charm of his brilliant personality. He certainly was a gallant pioneer of France in what was then the architectural desert of America.

Among the phenomena of those early days, when the plum-colored "Dartmouth Street" horsecar wabbled along the muddy road in front of the Institute and the "George R. Minot"and "A. A. Folsom" used to puff proudly under the Berkeley street bridge, was Mr. Daniel Pratt, the "Great American Traveler," who whenever he could get a handful of students to listen would reel off his otiose twaddle by the yard; and the mysterious lady who would appear on the sidewalk with a bag of circulars warning everyone against the Russian spies, who, it seemed, were everywhere, listening, in the walls of the houses, even in the hollow spaces of a 2″ x 4″ partition, ready to wreak destruction and ruin upon the nation. Like certain odors in the laboratory, these fabulously thin Russians couldn't fail to create a passing impression upon our minds, which in my case has been permanent.

The expansion of traffic up Boylston street, which found that thoroughfare brick and left it galvanized iron, had only just begun, and Williams & Everett's picture gallery, opposite the Public Garden, was the only sign of business on the street, except the emporium of Mr. Ridler, the "book seller under the Berkeley," from whom we procured such thrillers as Wells' Algebra, Luquien's "French Prose of Popular Science" and later those imposing three-deckers, "Ganot's Physics" and the "Handwörterbuch" of Thieme Wesseley.

The modern freshman in these days of Institute spirit, of prosperity and expansion, would find it hard to realize the desolate life of those early days. No one will recognize more fully than I the devotion of the pioneers who brought the school through those times of stress; but, nevertheless, if a little more milk of human

kindness had been distributed in the 80's by the "men higher up" the growth of the Institute spirit would have come about twenty years sooner and its early life would have been that of a hardy perennial, instead of a hot-house exotic.

Even in the following years of my course little was done to make science attractive. Those were the great days of the beginnings of commercial utilization of the telephone, of the electric light and trolley locomotion, but our science lectures imparted, to my mind at least, no hint of how these marvels were brought about, nor was any practical explanation ever given to us of the application of "Applied" mechanics or the Calculus to any purpose which would be humanly probable.

These deficiencies have now, I suppose, been corrected, and these images are but memories, which would not have been revived but for your insistence that I write a page or two about them. Perhaps after all they can best be crystallized in conclusion with a few lines of parody of an old song which might be entitled "General Moore":

Oh, don't you remember those days of '85
When they lined us up for the drill,
And old Major Fiske was the biggest man alive
And the bass-drum thumped fit to kill?
Then we'd tear down the street to the classroom
and the lab
Or hang 'round the big front door,
Those good old days in the fall of '85
When we drilled for General Moore!

Oh, don't you remember those days of '89
When Gatty Lanza got us by the neck?
His catenary curves with their epicyclic sine
Made us sick to death of the Tech!
Then they passed sheepskins out and we hung
them in a frame,
And said good-bye to the boys,
And ten ev'ry week came in handy just the same
When "S. B." failed to make a noise!

WALTER H. KILHAM, '89.
Of Kilham & Hopkins, Architects,
Boston, Mass.

A PROBLEM IN FOUNDATIONS

Subsurface conditions at the new site and the methods employed by the engineers in determining the character of the foundations

It has not been the policy of the REVIEW to publish technical papers except under unusual conditions. The problems relating to the foundations of the New Technology are of such unusual character, however, that the report by Charles T. Main '76 will have a double interest for Technology engineers. The report is as follows:—

The purpose of this paper is to describe: 1st. The geological conditions found at the new site of the Massachusetts Institute of Technology and the methods used in determining the condition. 2d. The foundations as built and the reasons governing the types used. 3d. Appendix A, containing the pile and load tests.

In order to design foundations for the new buildings, it has been necessary to make an unusual amount of study of the soil and rock underlying the site and the supporting capacity of the same.

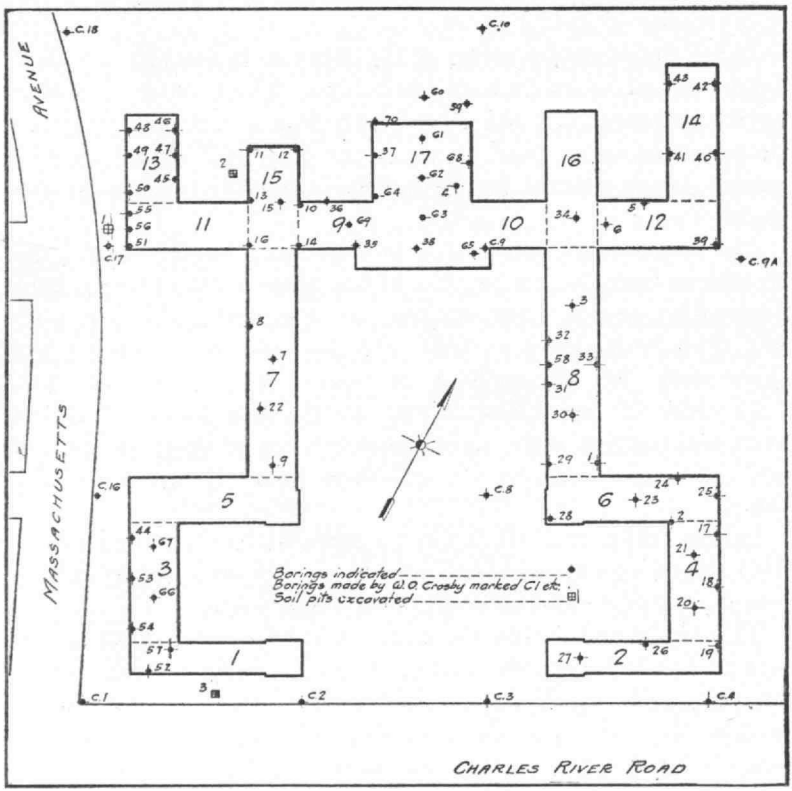
In July, 1913, Prof. W. O. Crosby submitted a report on the site. This report was based chiefly on the results obtained from borings in, and just outside the limits of the new site.

This report shows that the bed rock is found at a depth of 120 feet to 135 feet from the surface and appears to be quite level. The materials overlying the bed rock include, in succession, boulder clay varying in thickness from a few feet to 25 or 30 feet; blue clay with a normal thickness of 60 to 100 feet; glacial gravel ranging from nothing to 35 feet in thickness; silt from 0.0 feet to 18 feet in thickness; peat, very thin and showing in a few places only, and the artificial filling at the surface varying in thickness from a few feet to 15 or 20 feet.

The borings made by Professor Crosby were rather widely separated and it was found soon after actual work was begun that the character and surface levels of the glacial deposit changed frequently so that it was thought necessary to make additional borings in the sites of the different buildings.

The locations of both sets of borings are shown on the accompanying plan, together with some of the cross sections, illustrated on pages 590, 593, and 595, which show the varying character of the upper soil which is located under some of the buildings.

Three test pits have been dug to a depth of about 22 feet in order to check up the wash borings. Ten concrete test piles and



LOCATION OF TEST BORINGS

at least seventy wooden piles were driven for the purpose of further determining the character, resistance and bearing power of the sub-strata.

A considerable part of Professor Crosby's report is devoted to the cause of the observed settlements of structures which surround the new site. He states that it is his opinion that the settlements are only such as would be expected from a study of

their foundations and the underlying earth conditions, and that it is his belief that had the foundations of these structures been carried down to or supported on the glacial gravel, that they would not have settled to any appreciable extent.

The term "glacial gravel" is understood to mean that deposit immediately found above the clay, which varies in character from fine sand to coarse gravel. As it is found generally to be well compacted and comparatively near the surface, it was decided to support the foundations upon it wherever practicable.

The clay found under the glacial gravel is of remarkably uniform character, of little plasticity, and, to use Professor Crosby's words, "it is probable that in its normal condition in the ground all of the clay is devoid of excess moisture and fairly to be described as stiff."

It has been assumed, however, that if settlement occurs, it will be in the clay and in order to reduce this settlement to a minimum, it was decided to spread the building loads over the glacial gravel, as much as practicable, which in turn would still further distribute the loads over the clay bed.

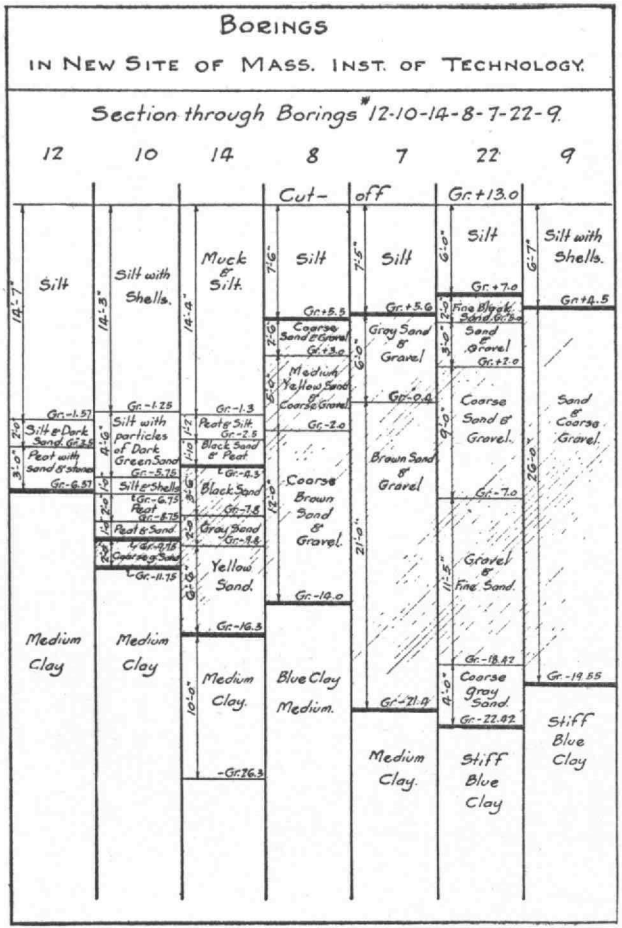
In order to provide for a wide distribution of load on the gravel in the most uniform manner, with a resulting low pressure per square foot, it was decided to use a large number of wood piles, each sustaining a relatively small load, rather than a few heavily loaded piles. Diagram on page 591.

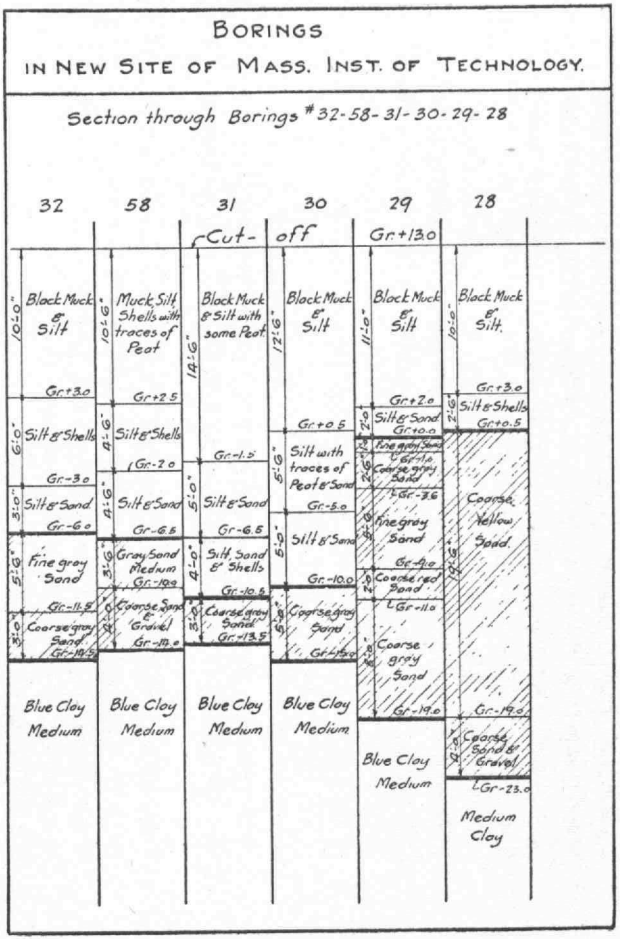
This diagram shows the piling under a footing resting in 12 feet of gravel or sand and the assumed spreading of the load accomplished by means of 60° angles of distribution, with the horizontal. The building loads in this case were reduced to about three-fourths of a ton, on the surface of the clay, which would be in addition to the load of the overburden already found on the site in place.

The decision that heavy concentrated loads were to be avoided precluded the use of concrete piles for this particular work.

It was also found that wood piling would be considerably less expensive than concrete piling, due to the fact that the permanent water level was high, making it unnecessary to place any concrete in addition to that required for the foundations to meet the heads of the wood piling, also to the fact that large piles do not prove economical where flexibility is required for light as well as heavy loads.

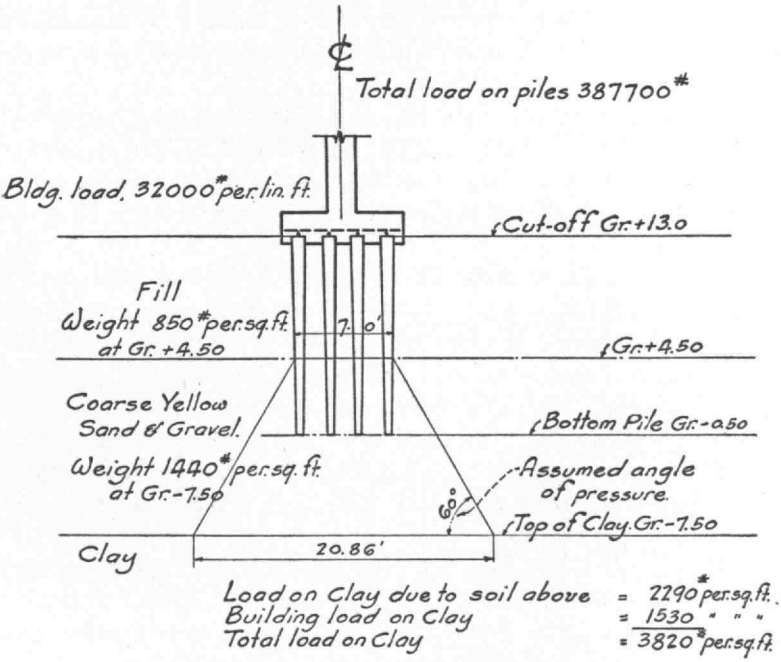
Interesting tests were made, however, on concrete piles of both the Simplex and Raymond types.


Borings
in New Site of Mass. Inst. of Technology.
Section through Borings # 12-10-14-8-7-22-9.
12
10
14
8
7
22
9
Cut-
off
Gr.+13.0
Silt
Silt with Shells.
Muck & Silt.
Medium Clay
Blue Clay Medium.
Stiff Blue Clay
Coarse Yellow Sand.
Coarse Sand & Gravel.
Brown Sand & Gravel
Gray Sand & Gravel
Fine Black Sand
Gravel
Fine gray Sand
Coarse gray Sand
Silt & Sand
Silt & Shells
Peat & Silt
Black Sand & Peat
Peat & Sand
Peat with sand & stones
Silt & Dark Sand
Silt with particles of Dark Green Sand
Coarse Brown Sand & Gravel
Yellow Sand.
Medium Yellow Sand & Coarse Gravel
Coarse Sand & Gravel
Gravel & Fine Sand
Coarse gray Sand
Sand & Coarse Gravel
Gr.+5.5
Gr.+5.6
Gr.+7.0
Gr.+4.5
Gr.-1.57
Gr.-1.75
Gr.-1.3
Gr.-2.5
Gr.-8.3
Gr.-7.8
Gr.-9.4
Gr.-16.3
Gr.-2.0
Gr.-10.0
Gr.-0.9
Gr.-7.0
Gr.-18.47
Gr.-22.62
Gr.-19.55
Gr.-6.57
Gr.-5.75
Gr.-6.75
Gr.-8.75
Gr.-9.75
Gr.-11.75
Gr.-76.3
Gr.-21.9
Gr.+3.0
Gr.+2.0
Gr.-23.0


Borings
in New Site of Mass. Inst. of Technology.
Section through Borings # 32-58-31-30-29-28
32
58
31
30
29
28
Cut-
off
Gr.+13.0
Black Muck & Silt
Muck Silt Shells with traces of Peat
Black Muck & Silt with some Peat
Silt with traces of Peat & Sand
Silt & Sand
Silt & Shells
Fine gray Sand
Coarse gray Sand
Coarse Sand & Gravel
Coarse Yellow Sand.
Gr.+3.0
Gr.+2.5
Gr.-1.5
Gr.+0.5
Gr.+7.0
Gr.+3.0
Gr.+0.5
Gr.-7.0
Gr.-6.5
Gr.-5.0
Gr.-10.0
Gr.-3.6
Gr.-4.0
Gr.-11.0
Gr.-19.0
Gr.-10.9
Gr.-11.5
Gr.-13.5
Gr.-17.0
Gr.-19.0
Gr.-23.0
Blue Clay Medium
Medium Clay

The plan shown on page 597 with the buildings in outline, showing the location of most of the important test piles and near the location of each pile has been placed a letter in addition to its number to designate its kind, S meaning spruce, O for oak, P for southern pine, etc.

Spruce piles from Nos. 1 to 30, inclusive, were driven from September 8, 1913, to September 25, 1913; spruce piles Nos. 31, 32, 33 and 34 were driven on December 2, 1913; oak piles 1 to 16 in-



clusive were driven on December 2, 3, 4 and 5, 1913; and piles in Building No. 17 were driven in September and October of 1914.

Other piles were driven and tested as noted on pages 599, 601. Piles enclosed in squares, plan on page 597, were load tested.

After determining that wood piles were to be used, it became necessary to make a sufficient number of tests in order to determine the kind and length to use in different parts of the site.

This task was rather difficult, owing to the great variety of soil conditions found, as will be seen by reference to the geological charts and pile-driving reports.

It will be noted that the investigations were first carried on largely on the sites of the buildings forming the westerly part of the group where both spruce and oak test piles were driven.

Referring to page 599, which is a summary of spruce test piles driven and tested, it will be seen that spruce piles Nos. 1 to 10 inclusive were driven into the "glacial gravel," which at these locations is a well compacted and deep bed of material commonly known as coarse sand and gravel, to varying depths and upon being pulled were all found to be broomed or both broomed and broken. Three of these piles, Nos. 3, 5 and 7, were assumed to be good at the time of driving and were load tested before being pulled.

The results of such tests, because of their crippled condition, which was discovered after the tests were made, were of no special value except to show how these broomed and broken piles acted under load, and the following brief description of these is given for that purpose.

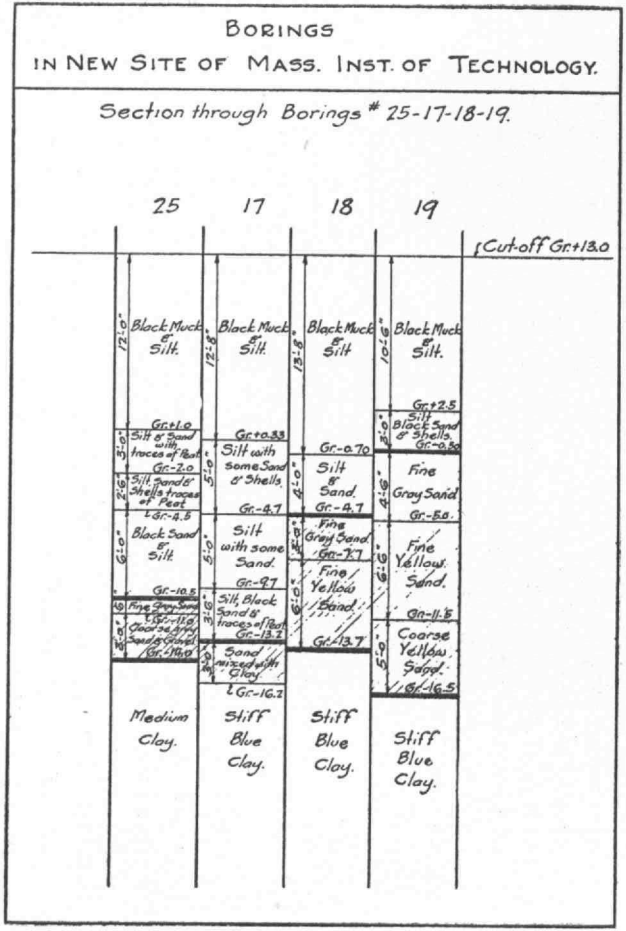
Spruce pile No. 3, about 17′–0″ long, 9″ diameter butt and 6″ tip driven with 2300 pound hammer and given short drops until the last few blows, where an average of 9′–8″ drop was given and a value of 16.7 tons obtained when using the so-called *Engineering News* formula. This pile passed through about 10′–6″ of loose sand, silt, shells and blue black mud and penetrated into coarse sand and gravel about 3′–9″, but when pulled, after load testing, was found broken at about the surface of the gravel and badly broomed at the break.

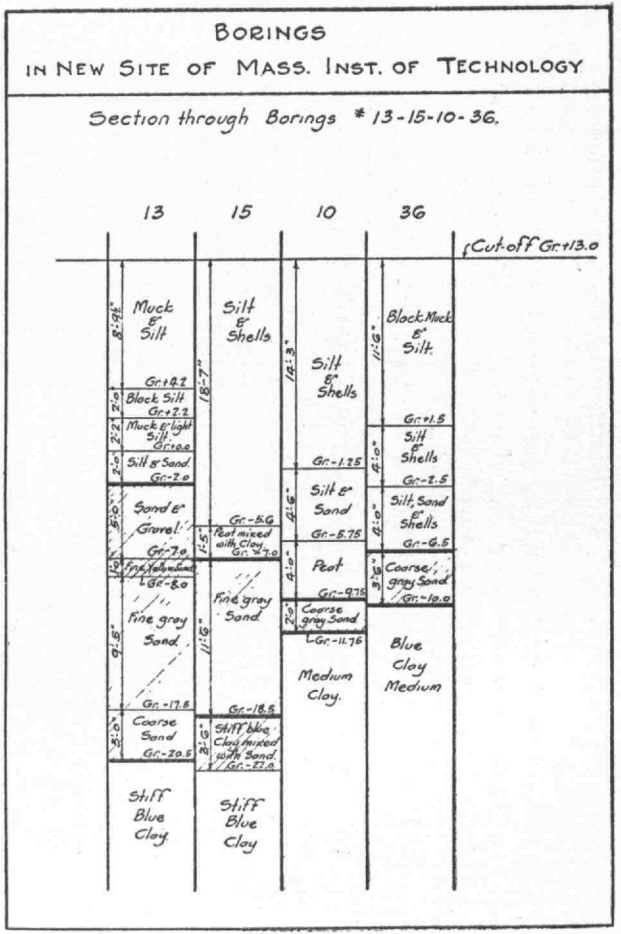
When tested with a load this pile, No. 3, carried 5.5 tons without noticeable settlement, but when this load was doubled, it settled 1/4″. As would be expected the settlements were marked and under a total load of 48,674 ran from 19/32″ to 1″.

Pile No. 5. Spruce, having an 11″ butt, 6″ tip, driven with 2300 pound hammer and with an average drop of hammer of 6′–2″ for the last blows showed an average settlement of 5/8″ per blow, which gives a formula value of 8.77 tons.

This pile passed through about 9′–7″ of loose sand, silt, shells, silt and black mud and penetrated the coarse sand and gravel for about 5′–1″, but when pulled was found broomed and broken just below the top of the gravel.

When tested with a load this pile carried 6.8 tons with a total


BORINGS
IN NEW SITE OF MASS. INST. OF TECHNOLOGY.
Section through Borings # 25-17-18-19.
25
17
18
19
Cut-off Gr.+13.0
Black Muck & Silt.
Gr.+1.0
Silt & Sand with traces of Peat
Gr.-2.0
Silt Sand & Shells traces of Peat
Gr.-3.5
Black Sand & Silt
Gr.-10.5
Fine Gray Sand
Gr.-11.5
Coarse Gray Sand & Gravel
Gr.-13.0
Medium Clay.
Gr.+0.33
Silt with some Sand & Shells.
Gr.-4.7
Silt with some Sand.
Gr.-9.7
Silt, Black Sand & traces of Peat
Gr.-13.2
Sand mixed with Clay
Gr.-16.2
Stiff Blue Clay.
Gr.-0.70
Silt & Sand.
Gr.-4.7
Fine Gray Sand
Gr.-7.7
Fine Yellow Sand
Gr.-13.7
Stiff Blue Clay.
Gr.+2.5
Silt
Black Sand & Shells.
Gr.-0.80
Fine Gray Sand
Gr.-5.8
Fine Yellow Sand.
Gr.-11.5
Coarse Yellow Sand
Gr.-16.5
Stiff Blue Clay.


BORINGS
IN NEW SITE OF MASS. INST. OF TECHNOLOGY
Section through Borings # 13-15-10-36.
13
15
10
36
Cut-off Gr.+13.0
Muck & Silt
Gr.+0.7
Black Silt
Gr.+2.7
Muck & light Silt
Gr.+0.0
Silt & Sand
Gr.-2.0
Sand & Gravel
Gr.-7.0
Fine Yellowish Sand
Gr.-8.0
Fine gray Sand.
Gr.-17.5
Coarse Sand
Gr.-20.5
Stiff Blue Clay
Silt & Shells
Gr.-5.6
Peat mixed with Clay
Gr.-7.0
Fine gray Sand
Gr.-18.5
Stiff blue Clay mixed with Sand
Gr.-21.0
Stiff Blue Clay
Silt & Shells
Gr.-1.25
Silt & Sand
Gr.-5.75
Peat
Gr.-9.75
Coarse gray Sand
Gr.-11.75
Medium Clay.
Black Muck & Silt.
Gr.+1.5
Silt & Shells
Gr.-2.5
Silt, Sand & Shells
Gr.-6.5
Coarse gray Sand
Gr.-10.0
Blue Clay Medium

settlement of only 1/32", but it settled quite rapidly for increasing loads.

Under about 18 tons load the settlement was 7/16" and showed a marked tendency to get out of plumb. Under about 20 tons the total settlement amounted to over 1".

This pile showed great unreliability.

Pile No. 7. Spruce, about 18'–4" long, 10" butt by 6" tip, driven with 2300 pound hammer having an average drop at last blows of 10'–0" and an average settlement of 1–3/4" at last blows, which gives a carrying value of 8.4 tons.

This pile passed through about 9'–2" of loose sand, gravel, shells and mud fill and penetrated the glacial gravel deposit about 5'–9" and when pulled was found broken and broomed just below top of the gravel.

When tested with a load this pile settled 1/16" under a load of about three tons and the rate of settlement was quite rapid under succeeding increments, amounting to over 1" under about 15 tons, to over 2" under 26.5 tons and over 3" under 32.75 tons.

After the load was removed this pile recovered 1/2" of settlement, showing the effect of the brooming.

It was plainly evident that spruce piles could not be driven, with safety, into the harder portions of this glacial deposit. After a study of the results obtained by a number of spruce piles which had been driven and pulled, it was thought best to limit the use of spruce to those places where friction was largely depended upon to give the bearing value and very little dependence placed on point bearing.

The test piles also showed that it was easily possible to drive spruce piles, which appeared to be good to the piling foreman and inspector, but which were actually found to be broomed and broken when pulled.

This discouraged the use of spruce piles where sudden changes in the hardness of the soil were found or expected.

Some of the marked and unaccountable settlements of structures which have been recorded in the past may have been due to some extent to the practice of driving spruce piles to or somewhat into hard crusts, thus resulting in brooming of the piles.

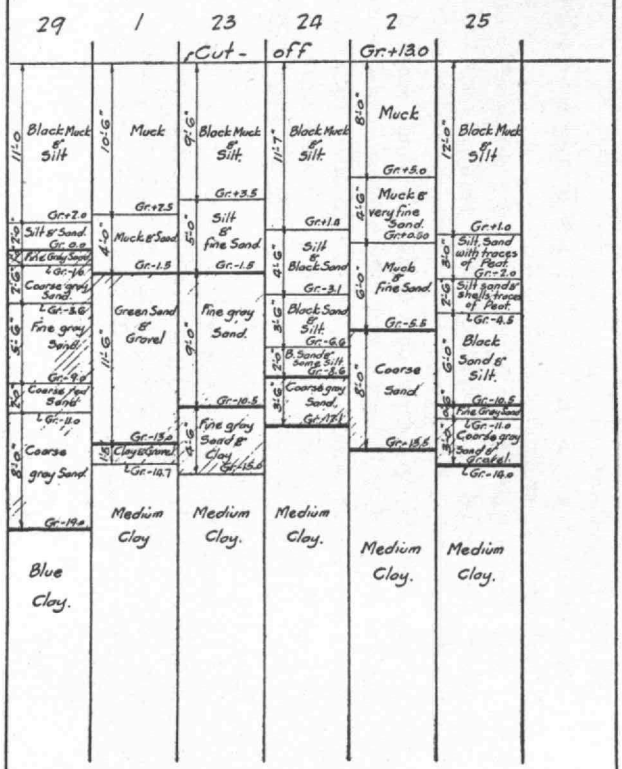
The tests also proved that first-class oak piles could be driven without injury into well compacted coarse sand or fine gravel to a resistance giving a value of eighteen tons or more.

1536/10 Spruce test pile #5 showing end of broomed pile after being dug out. Nov. 12, '13.


1536/2 View of tip of test pile #3 showing broom. 10-23-13

BORINGS
IN NEW SITE OF MASS. INST. OF TECHNOLOGY.

Section through Borings #29-1-23-24-2-25-

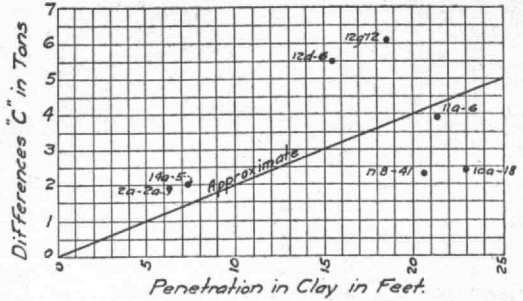


VALUE OF TEST PILES IN CLAY
IN NEW SITE OF MASS. INST. OF TECHNOLOGY

Identity	A Formula Value	B Allowable Value	C Difference	D Curve Value	E Working Value = A+D
2a-2a	7.16	9.0	1.84	1.24	8.4
14a-5	5.5	7.5	2.00	1.40	6.9
12d-6	6.5	12.0	5.50	3.20	9.7
12g-12	5.9	12.0	6.10	3.70	9.6
11a-6	4.5	8.4	3.90	4.30	8.8
10a-18	5.8	8.2	2.40	4.60	10.4
n8-41	8.5	10.8	2.30	4.20	12.7

Values in tons.

Notes:- Values in column "A" are according to Eng. News Formula.
Values in column "B" are derived from tests noted in tables of test piles.
Values in column "C" show differences between "A" and "B".
Values in column "D" show approximate increase over formula values for different penetrations of piles in clay.



Oak piles were used where the driving was hard and where the supporting value of the piles was to be gained largely from point bearing and relatively small embedments in the hard stratum.

For safety a maximum limit of about ten tons was permitted for spruce and fourteen tons for oak.

The *Engineering News* formula was used in determining values of piles for these foundations and for convenience curves were made up showing safe loads for piles for various weights and drops of hammers.

This formula is as follows:

$P = \frac{2Wh}{S \text{ plus } 1}$, in which

P = Supporting power in pounds.
W = Weight of hammer in pounds.
h = Fall of hammer in feet.
S = Penetration in inches.

Referring to sections shown on pages 590, 593 and 595 it will be seen that a great variety of soil conditions were found.

The glacial deposit ranged from a well compacted gravel and coarse sand, to fine sand, and from 35 feet in thickness to nothing, so that in parts of some buildings it was necessary to depend upon the clay for support.

A hard crust was found in only a few locations on either the "glacial gravel" or clay.

The clay in general was found to be of a remarkably uniform grade, designated as "medium," being neither very "stiff" or "soft" except in a few places.

From the driving records and sections it would seem that the surface of the glacial deposit was very uneven in places, as piles which were driven within a few feet of each other would find good bottom at levels differing by 10 to 15 feet or even more.

These conditions made it difficult to get uniform pile values and increased the cost of the pile driving.

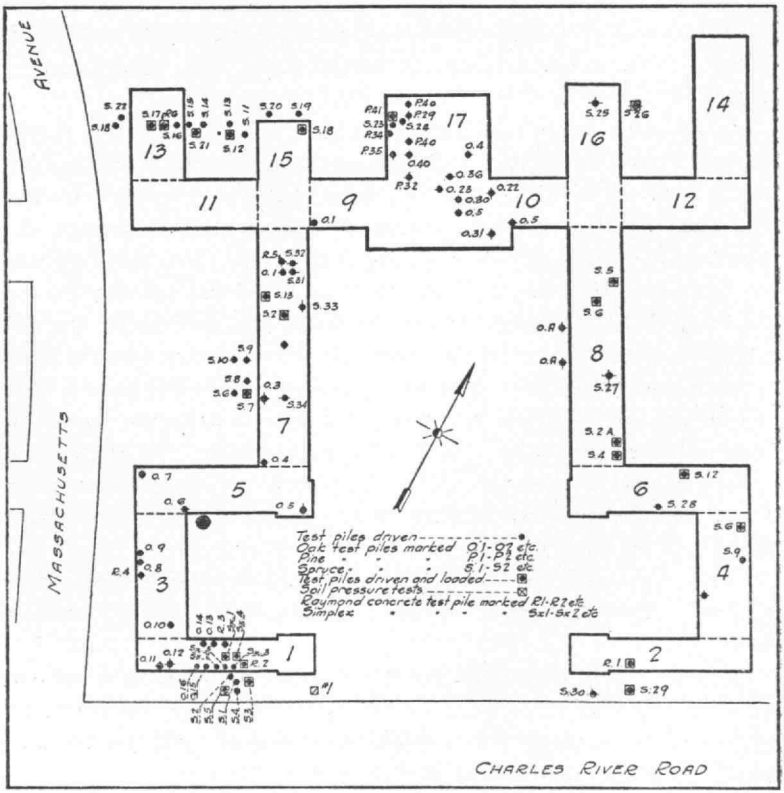
A fill was found over the original mud flats consisting of material such as mud, silt, shells and gravel, which in some places was very compact and offered considerable resistance to the piles.

As the friction of this material often entered into the final readings and raised the value above a true one its value should be subtracted from the result.

Where a hard fill, of gravel or shells, was found over glacial

gravel, with an intervening layer of peat, silt or mud, it was necessary to drive piles well into the glacial gravel for their true value and a conservative value assumed for them.

Not only will the hard fill, above the peat, etc., give the piles driven through it a high formula value at the time of driving, but may afterward add to the actual loads on the piles, by



LOCATION OF TEST PILES

reason of its friction when the peat or mud stratum becomes reduced in thickness, through decay or displacement.

The varying conditions found made it necessary to design the pile foundations on the basis of as nearly uniform settlements as possible. This uniformity is highly desirable in order to prevent over stressing the more or less continuous concrete floor beams and slabs used in the superstructure of the buildings.

The working values have been taken at about 1/16″ settlement, as shown by the tests, as it is believed that most piles have an initial settlement, whether noted or not, and considerable care was taken at these tests to note settlements at all times of changes as small as 1/64″. It is also believed that the effect of a difference in settlement of 1/16″ in the foundations can be safely ignored.

A settlement of 1/4″ was considered to be the limit of usefulness of a pile and it was assumed that greater settlements than 1/4″ might create conditions which would cause very unsatisfactory results.

It was also considered necessary that the piling have a safety factor of not less than 2.5 of tonnage based on the limit of 1/4″ settlement. From the results of the test piles it is evident that in the majority of cases the piles had to be driven quite deeply into the sand in order to assure a satisfactory tonnage but the effort was made to keep the piles in the glacial sand, even where it thinned up, as it was desirable to use the sand stratum as a medium for spreading the loads out over the clay under it. An effort was made to have a minimum of at least three feet of sand under the points even where the sand thinned up, in order to make the spreading of the load somewhat effective. It was found, however, that there were places where the sand was very thin, giving very little value to the piles, and if depended on alone would make the piers over them large and expensive.

When the sand was either of small value or disappeared altogether, it then became necessary to depend directly on the clay for support.

This clay with almost no exception was without a hard surface or crust, and in order to ascertain its value under working and ultimate loads, some piles, which were driven both partly and wholly into the clay, were load tested.

Two of these were also redriven, as well as a number of others not shown.

Regarding the safe working values, it was found, from the tests, that piles driven into sand could be used at their formula value, but not much higher, for the limits of settlements and safety factor assumed.

On the other hand, piles embedded in the clay found at this site, showed an ability to carry test loads in excess of the formula value. Referring to the curve shown on page 595, it will be seen that

TEST PILES
IN NEW SITE OF MASS. INST. OF TECHNOLOGY

GROUP-A SPRUCE

Identity		Length of File	Embedment		Surface grades		Ave. drop last blows 2300# Hammer	Ave. Pen. last 3 blows	Formula load Tons	Test load at ½" Settlement	Factor of Safety at ½" Settlement	Allowable value for F.S. of 2.5 or more	Character		Formula values at other Embedments	Reported condition when driven	Actual condition when pulled	Remarks
Bldg. No.	Pile No.		Sand	Clay	Sand	Clay							Sand	Clay				
Near No.1	1	31'-7"	?	0	+3.0	—	9'-9"	3"	—	—	—	—	Gravel	—	——	Broken	Broken	
	2	32'-9"	6'-6"	0	+6.25	—	7'-2"	⅓	—	—	—	—	do	—	——	Broomed	Broomed	
	3	17'-0"	3'-9"	0	+4.01	—	9'-8"	⅓	16.70	6.0 *	1.8+	—	do.	—	——	Good pile	Broken & Broomed	
	4	20'-0"	1'-6"	0	+5.30	—	4'-10"	5/16	—	—	—	—	do.	—	——	Hard driving	Broken	
	5	20'-0"	5'-1"	0	+5.13	—	6'-2"	⅝	8.70	7.0 *	1.8+	—	do.	—	——	Uniform driving	Broken & Broomed	
	6	20'-0"	3'-9"	0	+6.66	—	9'-6"	⅞	—	—	—	—	do.	—	——	Broomed	do.	
Near No.2	7	20'-0"	5'-9"	0	+6.29	—	10'-0"	1¾	8.40	3.1 Tons	1.8-	—	do.	—	——	Uniform driving	do.	
	8	30'-0"	8'-9"	0	+5.51	—	6'-0"	1	—	—	—	—	do.	—	——	Broken	——	
	9		4'-10"	0	+6.86	—	11'-10"	3¼	6.50	—	—	—	do.	—	——	Uniform driving	Broken	
	10	30'-0"	10'-11"	0	+5.23	—	7'-7"	¼	13.90	—	—	—	do	—	——	Hard but Uniform driving	do.	8" Crust
Near 15'	11	20'-2"	2'-8½"	0	-0.14	-12.58	8'-0"	2	7.80	—	—	—	Sand	—	——	——	——	
Near 11	12	30'-0"	12'-0"	0	-0.10	-12.08	9'-0"	2	6.90	3.75 ±	3.0 ±	4.5	Fine Sand	—	10 Tons @ 10.5	Uniform driving	OK	Early settlements appear excessive
Near 11	13	36'-0"	8'-0"	5.75	-5.00	-13.0	9'-0"	1½	9.20	—	—	—	——	—	10.3 " " 7.0'	" "	——	
Near 11	14	36'-0"	— 20.75 —		-0.25	—	5'-0"	⅓	—	—	—	—	——	—	8.2 " " 9.0'	Follower	used	
Near 13	15	32'-0"	— 13.67 —		-2.67	—	10'-2"	2	—	—	—	—	——	—	8.0 " " 12.5'	do.	do.	
13	16	36'-0"	18.75'	0	+3.53	-15.50	11'-2"	2	8.50†	—	—	—	Sand	—	8.7 " " 12.0'	Easy driving	——	
13	17	36'-0"	15.50'	1.56'	-1.50	-17.0	10'-0"	2	7.70	9.0 *	3.0	11 Tons @ 2.5	Fine Sand	—	8.6 " " 12.0'	do.	OK	
Near 13	18	36'-0"	16.30	1.0	-1.25	-17.5	10'-5"	½	9.66	—	—	—	Sand	—	——	Uniform driving	——	
Near 15	19	36'-0"	0	13.43	0	-6.57	11'-0"	5	4.20	—	—	—	0	—	——	Easy driving	——	
Near 15	20	45'-0"	6.0	22.33	-6.58	-12.5	10'-6"	3½	—	—	—	—	—	—	——	Follower used	——	
Near 11	21	44'-0"	14.5	12.5	-1.0	-15.5	11'-0"	½	10.1	Embedment and settlement readings of load test, doubtful.							——	
Near 13	22	45'-0"	12.0	13.45	-2.25	-14.25	10'-5"	1	12.0	—	—	—	Sand	—	11.4 Tons @ 12.0	——	——	
17	23	36'-0"	8.0	9.37	-3.0	-11.0	6'-4"	⅓	—	—	—	—	——	—	7.5 " " 6.0'	Follower used	——	
17	24	44'-0"	10.0	15.20	-2.0	-12.0	9'-2"	½	9.40	—	—	—	——	—	9.0 " " 7.0'	Uniform driving	——	
Near 16	25	45'-0"	13.25	14.50	+2.25	-11.0	10'-9"	¾	14.3	—	—	—	——	—	——	——	——	
Near 12	26	30'-0"	11.8	1.95	+1.40	-10.4	10'-6"	2	8.05	11.5	2.4	11.2	Sand	Blue Medium	9.2 " " 10.0'	4.6' of clay and shells above the sand.		

*= Found by interpolation.

the allowable increase of the formula value appears to be about one ton for every five feet of embedment in the clay.

This was taken full advantage of where the gravel and sand became either unreliable, of no practical value or disappeared, as in a part of Building 17 and others.

Piers were frequently made in clay in which the average formula value of its piles was six tons and less, but owing to the high value shown by tests these were allowed a value fully 50 per cent. greater, provided it was evident that they were well embedded in the clay.

An examination of the reports of piles 12, 6 and 18 in buildings 6, 4 and 15 respectively shows a high tonnage at 1/16″ settlement, but when compared with the tonnage at 1/4″ settlement, a low factor of safety is found, but when reduced to get a factor of about 2.5, it will be seen that there is still a very substantial amount above the formula tonnage, found at time of driving.

It is interesting to see, by the table, that the formula tonnage found by redriving the piles, after they had been allowed to thoroughly set, did not represent either the value under test load, at 1/16″ settlement or the "Allowable" tonnage.

Another feature in the problem of these foundations which was given some consideration was the matter of vibration, due to internal and external forces.

Without question it was necessary to construct the foundations in such a way as to reduce the possibility of vibration to a minimum, not only for comfort but because some of the laboratories will contain instruments of special accuracy and delicacy.

Special care has been taken regarding the foundations of heavy testing machinery, to reduce the possibility of settlement and excessive vibration, by placing sufficient well driven piles under such machines and allowing about 50 per cent. of the value given piles under the building walls.

The greatest vibration will come to the structures from external sources, such as engines in nearby power houses, freight trains, electric cars, etc., conveyed to the buildings by means of the comparatively hard top fill which lies over the stratum of mud, silt and peat.

Peat is found in some locations within the building site and is probably general on the north and east sides of the buildings, extending through that portion of East Cambridge where a

TEST PILES LOADED.

IN NEW SITE OF MASS. INST. OF TECHNOLOGY.

GROUP-B.

Identity		Length of Pile	Embedment		Surface grades		Ave. drop last blows of Hammer	Ave. Pen. last 3 blows	Formula load Tons	Test load at 1/8" Settlement	Factor of Safety at 1/8" Settlement	Allowable value for F.S. of 2.5 or more	Character		Formula values at other Embedments	Reported condition when driven	Actual condition when pulled	Remarks
Bldg. No.	Pile No.		Sand	Clay	Sand	Clay							Sand	Clay				
8	14a5	35'-10"	11'-6"	7'-3"	-1.5	-13.0	2600@10'	3 3/4"	5.50	5.5 Tons*	6.5	7.5 Tons	Coarse & Medium	Medium	—	—	O.K.	Allowable value limited by settlement
8	2a4	30'-0"	13'-2"	0'-6"	-1.5	-14.7	2150@10'	2 1/2"	6.14	7 "	1.75	5.0 "	Sand & Fine Gravel	do.	—	—	—	
8	12d6	42'-6"	11'-6"	15'-4"	-1.5	-13.0	2600@10'	3"	6.50	9 " *	4.0+	12.0 "	Coarse & Medium	do.	—	—	—	
8	2a2a	35'-9"	12'-6"	6'-2"	-1.5	-14.5	2150@10'	2"	7.16	10 "	2.3	9.0+ "	do.	do.				
6	12g12	45'-0"	1'-5"	18'-4"	—	—	2600@10'	3 3/8"	5.90	15.43 "	2.0	12.0 "		do.	Redriven Value			13.90
4	11a6	50'-0"	0	21'-3"	0	-13.2	2580@10'	4 3/4"	4.50	12.80 "	1.63	8.4 "	0	Stiff	"	"		11.50
15	10a18	42'-6"	0	23'-0"	0	-6.6	2300@10	3"	5.80	12.80 "	1.60	8.2 "	0	Medium				
7	13g13	14'-9"	5'-10"	0	+5.60	0	2300@10'	2 1/2"	7.40	8.0 " *	1.75	6.0 "	Sand Gravel	0			Pulled O.K.	
7	11d2	15'-6"	5'-7"	0	+5.60	0	2300@10	1 5/8"	8.80	9.0 " *	1.56	5.6 "	do.	0			" "	
	From GROUP A. (Repeated here for convenience.)																	
Near 15	12	30'-0"	12'-0	0	-0.7	-12.6	2300@9.0	2"	6.9	3.75± "	3.0 ±	4.5 "	Fine Sand	—	10 Tons @ 10.5'	Uniform driving	Pulled O.K.	Early settlement appear excessive
Near 13	17	36'-0"	15'-6"	1.56	-1.5	-17.0	" @10.0	2"	7.7	9.0 " *	3.0 ±	11.0 Tons@2.5	"	—	8.6 " @ 12.0	Easy driving	O.K.	
Near 11	21	44'-0"	14'-6"	12.60	+1.0	-15.5	" @11.8	1 1/2"	10.1	Embedments doubtful & settlement readings of load test doubtful.								
Near 16	26	30'-0"	11'-10"	1.95	+1.4	-10.4	" @10.5	2"	8.05	11.50 "	2.4 "	11.2 "	Sand	Blue Medium	9.2 " @ 11.0'	4'-6" of Clay and Shells above the Sand.		
Near 2	29	30'-0"	10'-0"	0.5	+1.3	-8.6	" @6.5	5/8"	9.02	9.0 " *	2.2 "	8.0 "	Coarse Sand	Clay & Gravel	11.2 " @ 11.0'	Uniform driving	Tip slightly brroomed around edges.	Early settlement readings in question.
17	n8-41	46'-0"	5'-6"	20.75	-3.50	-9.0	2550@10'	2"	8.50	9.8 " *	2.75 "	10.8 "	Fine & Coarse	Medium Blue	Uniform increase in tonnage in clay.			

TEST PILES

IN NEW SITE OF MASS. INST. OF TECHNOLOGY.

GROUP-A CONTINUED.

Identity		Length of Pile	Embedment		Surface grades		Ave. drop last blows 2300 lb. Hammer	Ave. Pen. last 3 blows	Formula load Tons.	Test load at 1/8" Settlement	Factor of Safety at 1/8" Settlement	Allowable value for F.S. of 2.5 or more	Character		Formula values at other Embedments	Reported condition when driven	Actual condition when pulled	Remarks
Bldg. No.	Pile No.		Sand	Clay	Sand	Clay							Sand	Clay				
Near 8	27	41'-0"	5'-9"	3'-9"	-5.75	-11.50	10'-9"	1 7/8"	10.7	—	—	—	Sand	—	—	—	—	
6	28	42'-0"	13'-6"	6'-4"	-1.50	-15.00	8'-6"	3/8"	14.0	—	—	—	Sand	—	12.2 Tons @ 10.0'	Uniform Driving	—	
Near 2	29	30'-0"	10'-0"	0'-6"	+1.30	-8.60	6'-6"	5/8"	9.2	9 *	2.20	8	Coarse Sand	Clay & Gravel	11.2 " - " 10.0'	do.	Tip slightly broomed around edges.	Early settlement readings in question.
Near 2	30	40'-0"	13'-6"	0	-0.80	-12.0	13'-6"	3/8"	20.0	—	—	—	Sand	—	14.0 " - " 11.0	Probably Broomed		
7	31	25'-0"	11'-7 1/2"	0	+3.80	—	7'-0"	1	8.0	—	—	—	Fine Sand	—			Pulled OK	
7	32	34'-0"	17'-10"	0	+3.10	—	5'-0"	1/2"	7.6	—	—	—	do.	—	9.1 " - " 11'-6"		Pulled OK	
7	33	30'-0"	10'-0"	0	+4.40	—	5'-0"	1/2"	7.7	—	—	—	do.	—	9.1 " - " 9'-0"		OK	
7	34	18'-0"	5'-4"	0	+5.60	—	5'-0"	1	5.7	—	—	—	do.	—	8.0 " - " 10" 6.0 " - " 24"		OK	

number of factories and power houses are located. Nearly the entire site of the new buildings has a stratum of silt, mud and fill above the sand and clay. The buildings have therefore a foundation of piles which for their entire lengths, above that part embedded in sand or clay, pass through a material affording very little lateral support.

Under the action of driving piles, this material softened up to such an extent as to allow the piles to vibrate strongly, often throwing mud and water out around them.

Structures which are supported on piles passing through such soft, water filled strata, not only readily send out vibrations, but are strongly affected by vibrations from other sources, if situated along the same strata.

One method of partially resisting such a tendency is to drive the piles well into the supporting stratum, rather than resting them on the surface or with a foot or two of penetration.

As the pile tests show that it was generally necessary to get a fair embedment, in order to get the bearing values desired, it was made unnecessary to largely increase that embedment in order to gain stiffness.

In general the unit stresses per pile averaged 9.5 tons for interior piers and one-half to three-quarters of a ton less for exterior piers and walls.

It is believed that if settlements occur, the small difference in loading will tend to make slightly greater settlements in the centre of the building and prevent the bulging tendency of walls which would occur if the wall piles settled more than the interior piles.

Foundations above Piles

Reinforced concrete spread footings were used to distribute the wall and column loads to the piles. Such footings are permissible only when placed on a compressable surface of practically uniform resistance.

This will produce bending stresses in the footings, similar to those produced by a uniformly distributed load.

The permanent ground water level was such as to permit the cut-off grade of piles to be fixed at plus 13.00 Cambridge datum, and is 4.10 feet below the basement floor level. The permanent water level is not less than plus 13.00 Cambridge datum.

With few exceptions the difference of 4.10 feet between floor and pile cut-off permitted the reinforced spread footings to be placed without lowering the cut-off.

The design of these footings was based on the formulae recommended by Professor Arthur N. Talbot, of the University of Illinois in Bulletin No. 67, the formulae being determined from the result of many experiments.

The working stresses are those recommended in the latest report of the Joint Committee on Concrete and Reinforced Concrete, except that a maximum of 18,000 pounds per square inch tension was allowed for square rods cold twisted.

With this general type of footing it is recognized that the piles immediately under the load will be stressed somewhat higher than those at the edges, but this tendency was reduced to some extent by making the depth of the footings such that the unit punching shear conformed quite closely to that recommended by the joint committee.

This is especially necessary in cases of oblong footings, where the dimensions are 20′ x 10′ for example, in order that the piles directly under the column shall be not excessively loaded.

The reinforcing steel used in these foundations was mostly square bars cold twisted.

The pile heads were covered with concrete to a distance of 6″ below their tops, while the steel was placed with at least 2″ of clearance above the tops of piles, affording ample protection against rusting or deterioration of any kind.

Dr. Noyes at Throop College

Dr. Arthur A. Noyes, of the Massachusetts Institute of Technology, has become a member of the faculty of the Throop College of Technology, Pasadena, Cal., for a portion of the coming academic year, and for one half of the time in succeeding years, beginning with 1916–17, this arrangement having been made possible by a gift of $10,000 for the equipment of a physical chemistry laboratory, and the endowment of this laboratory in a sum yielding $10,000 annually for its support. This laboratory is to be located in a new chemistry building, which is expected to be built during the coming academic year.

PROFESSOR LOCKE'S WESTERN TRIP

He met more than 200 Tech men and attended many meetings—Great interest in Tech shown everywhere

Prof. Charles E. Locke, '96, of the Department of Mining Engineering and Metallurgy, made a long western trip this past summer, visiting various mining districts. Incidentally, an opportunity was given for him to meet the alumni, both individually and collectively. He reports the following districts visited and the men seen:

Only a brief luncheon was possible at the University Club of the University of Illinois, at Urbana, Ill., where nine Tech men sat down around the table on Monday, June 21. These nine men were: E. W. Washburn, '08, A. B. McDaniel, '01, L. J. Towne, '09, Dr. F. H. Newell, '85, H. F. Ferguson, '12, E. A. Holbrook, '04, H. E. Babbitt, '11, Paul Hansen, '03, C. E. Locke, '96.

An important feature of the gathering was the presence of four guests from the mining department of the university: H. H. Stoek, A. C. Callen, L. E. Young and R. Y. Williams. Time was not long enough to go fully into details of conditions in Boston, but considerable discussion was allowable and many questions were answered.

Next, in southeast Missouri, while no official meeting was held, four Tech men were met, W. H. Comins, '02, and F. V. Desloge, '02, superintendents respectively of the St. Louis Smelting & Refining Company, and the Desloge Lead Company, also A. P. Watt, '06, and B. B. Tremere, Jr., '13, in the employ of the Mine La Motte Company.

At Joplin, in southwest Missouri, the following Tech men were met informally, in evening gatherings in the hotel lobby: T. F. Lennan, '99, N. P. Rood, '99, H. B. Pulsifer, '03, and F. N. Bull, '04.

At Denver, the Rocky Mountain Club had a regular dinner at the Shirley Hotel the evening of June 30. The meeting adjourned for a talk to the rooms of the Colorado Scientific Society where lantern slides were shown by Professor Locke and a talk and

demonstration of the properties of radium was given by Mr. S. C. Lind, '02, of the United States Bureau of Mines. Incidentally, this was election night and there was considerable energy displayed by members of the club in inducting new members into office. The following were present: Frank E. Shepard, '87, H. D. Smith, '89, Frank H. Field, '89, F. B. Choate, '91, Orren Allen, '92, J. Y. Parce, '93, Charles E. Locke, '96, F. L. Lacaff, '99, F. W. Horton, '04, S. C. Lind, '02, R. P. Raynolds, '06, M. W. Hayward, '06, George D. Luther, '07, John J. Mullen, '08, M. G. Graff, '16. The club had as a guest, Mr. H. C. Parmelee, western editor of the *Metallurgical and Chemical Engineering*, and one of the trustees of the Colorado School of Mines.

C. L. Dean, '05, C. R. Hill, '13, and E. S. Wiard, '99, were also seen in Denver, E. P. Chapman, '09, at Pueblo, E. H. Laws, '96, at Salida, and Eugene Burton, '05, at Leadville.

The meeting at Salt Lake took the form of a roof garden party at the Hotel Utah which adjourned for a talk to one of the rooms below.

The following were present at the Intermountain Association meeting: L. T. Cannon, '96, S. Q. Cannon, '99, J. C. Damon, '05, O. H. Gray, '97, O. P. Scudder, '03, E. P. Fleming, '01, Walter H. Trask, '06, J. W.Maxwell, '08, R. E. Wells, '14, B. W. Mendenhall, '02, V. S. Rood, '07, M. H. Foss, '09, G. S. Humphrey, '10, H. H. Burton, C. E. Locke, '96. J. H. Leavell, '07, was unable to be present on account of rush of business, but was seen the next day and made ample reparation for his absence. Here again, the annual election was one of the main features of the evening. C. G. Whitley, '91, was also met for a few minutes at his office.

The annual meeting of the local Montana society was attended on July 17, the following men being present: C. W. Goodale, '75, W. B. Fisher, '78, C. D. Demond, '93, C. E. Locke, '96, L. A. Stadler, '01, W. A. Kemper, '04, R. Hayden, '06, E. S. Bardwell, '06, F. C. Jaccard, '07, N. S. Hammond, '08, J. T. Ellsworth, '08, M. F. Graupner, '12, W. J. Winninghoff, '14, T. D. Brophy, '16. The banquet was held at the famous Silver Bow Club of Butte and the illustrated talk was given in a special hall across the street. Other men who were met in Montana were W. C. Capron, '92, W. Jenney, '77, F. C. Noble, '81, and A. E. Wiggin, '07, at Anaconda, Prof. G. W. Craven, '98, at Butte, F. R. Ingalsbe, '06, at Missoula. A very pleasant social evening was spent at Anaconda at the home

of Mr. Wiggin, who had thoughtfully invited other Tech men to his house for an evening of music, talk and refreshments.

The banquet at Butte happened to be another occasion where the annual election of officers took place.

In Wallace, Idaho, telephone connection was obtained with D. F. Haley, '01, general manager of the Interstate Callahan Company, and in Spokane, Wash., George A. Sonneman, '90, took Professor Locke in charge for several hours and gave him a good view of the city and the park systems which have been developed by one of the former superintendents of the Metropolitan Park System of Massachusetts. Sonneman has gotten out of mining to a great extent and is running a laundry and managing a hotel.

The luncheon at Seattle took place at the Commercial Club on Friday, July 23. Present: M. P. Anderson, '01, Jos. Daniels, '05, W. S. Matheson, '99, W. A. Gleason, '97, H. S. Taft, '96, C. M. Lewis, '99, W. F. Carr, '84, and C. E. Locke, '96. The whole thing was delightfully informal and a constant discussion was kept up during the whole luncheon hour which passed all too quickly. En route from Seattle, H. O. Cummins, '02, was met at Redding, Cal., S. H. Brockunier, '93, at Nevada City, Cal., and A. B. Foote, '99, at Grass Valley, Cal.

The San Francisco dinner, Tuesday, August 10, took on the nature of a Faculty meeting, there being present, Dr. Tyler, Dr. Dewey, Professor Locke, and A. L. Brown of the M. I. T. instructing staff. Other men who attended were: W. H. Shockley, '75, J. J. Donovan, '06, J. R. Brownell, '01, H. F. Clark, '12, A. E. Wells, '06, H. H. Calvin, '12, T. B. Lawler, '12, H. G. Simpson, '03, W. E. Leland, '91, W. G. Horsch, '13, W. A. Clapp, '93, W. W. Karnan, '08, Allen Hazen, '88, W. C. Lynch, '12, G. E. Atkins, '04. Professor Hyde of Berkeley happened to be out of town on that evening, but was seen later, as well as Howard C. Plummer, '00, of Niles. An informal lunch was held with Professors R. W. Lodge and E. C. Jacobs.

In the oil fields, two Tech men, B. E. Lindsley, '05, and P. M. Paine, '04, were located at Taft, Cal.

At Los Angeles the meeting for luncheon was at the University Club, Thursday, August 19. Present: John C. Chase, '74, Charles T. Leeds, '06, J. A. Osgood, '70, Milo C. Halsey, '10, Herbert M. Morley, '03, W. H. Adams, '03, Herbert A. Wilcox, '87, R. S. Hardy, '96, W. T. Knowlton, '93, Paul J. Pitner, '03, H. C. Blake,

'06, F. G. Cox, '03, Paul E. Jeffers, '12, C. Harold Hopkins, '13, Robert S. Breyer, '10, G. A. Joslin, '09, Geo. L. Uman, '12, Frank J. Severy, '04, L. C. Hampton, '07, Desaix B. Myers, '08, Edw. L. Mayberry, '06, Lyman Farwell, '87.

At Globe, Ariz., informal gatherings were held with F. H. Soderstrom, '09, E. M. Marshall, '12, and H. S. Duncan, '07, who are on the engineering staff of the Old Dominion Company, Rev. J. I. B. Larned, '08, who has a pastorate in Globe, R. B. Yerxa, '03, mill superintendent at Miami, and G. H. Ruggles, '06, who has been at work on the power plant for the Inspiration mill and smelter, Louis Cates, '02, and George Wald, '05, at the Ray Consolidated mine, and Frank A. Thanisch, '96, at the Kelvin-Sultana mine.

At El Paso, W. M. Drury, '03, kindly had a gathering including R. F. Manahan, '03, Harry Ladd, '92, and Professor Locke, at his house.

Tentative plans had been made for a meeting in New Orleans, but the time between arrival of train and sailing of the boat for New York did not allow any possibility of a meeting.

At all of the meetings at which Professor Locke spoke, and also in talking with individuals, a lively interest was shown in all matters relating to Technology, including the progress on the new site, the coöperative work with Harvard, the doings of the Faculty, especially those members who date back a number of years, the possibility of a western trip by Dr. Maclaurin in the near future, and plans for a big 1916 reunion, where many are planning to be present if their expressed desires are possible of fulfillment.

Professor Locke was most hospitably received everywhere, and one of the results of his trip is that he is more firmly convinced than ever of the asbolute truth of the commonly expressed belief that the fact that a man is a Tech man is sufficient introduction to other Tech men to enable him to be received as a brother among them, and to be treated with all the advice and help that would naturally come from brother to brother.

NEW YORK WAR TALKS

Noonday talks on timely topics increasing club interest—New Constitution adopted

The enterprise of the New York Technology Club in arranging for a series of war talks last year created much favorable comment among the college clubs of New York as well as elsewhere. The talks were given at luncheon time by authorities on the subject, and there was a good attendance at every luncheon. The recent new phases of the war have suggested another series of talks, and arrangements were made for such a series early in the fall and began on Wednesday, September 22, the first speaker being Henry A. Wise Wood, president of the American Society of Aeronautical Engineers, chairman of the Conference Committee on National Preparedness, etc. The subject of Mr. Wood's address was "The Munroe Doctrine and its Bearing upon the Welfare of the United States."

The second war luncheon talk was given on September 29, by Mr. Alexander M. White, president of White, Weld & Company, bankers, president of the American Legion, etc. Mr. White spoke on "The Purpose of the American Legion."

The third address in the series occurred October 6, when Mr. Arthur Richmond Marsh, editor of the *Economic World*, spoke on "The Economic Significance of National Debts" with particular reference to war debts of Europe. Through the courtesy of the *Economic World* the club was able to send members a copy of this publication containing the address of Mr. Marsh.

On Wednesday, October 20, Major-General O'Ryan addressed the club on "The National Guard of New York State."

Luncheon is served at twelve o'clock, and the speaking starts promptly at 1.15. Members of the club are privileged to bring guests.

A committee of the New York Technology Club has been working some time on a new constitution which will make the governors of the club fully representative of its members. Under the plan, which was finally agreed upon, the governors will be elected by the club at the annual meeting, a practice which conforms with that of other clubs. A number of other changes have been made,

many of them to clear up obscure places in the constitution. The committee having this in charge consisted of William H. King, '94, Walter Large, '79, and Lester D. Gardner, '98.

On Friday, October 22, at 8 p. m. there was a special meeting of the club to consider the changes in the constitution. After the business meeting Mr. C. F. Roland, of the National Tube Company, exhibited moving pictures showing the making of "National" pipe from ore to the finished product, taking in every feature of its manufacture.

Professor Spofford on Terminal Commission

Governor Walsh of Massachusetts is following out his principle of getting for the Commonwealth the services of college instructors in appointing to the commission on terminal facilities in Boston, Professor C. M. Spofford, '93, head of the department of civil and sanitary engineering at the Massachusetts Institute of Technology. It is a commission which serves without compensation, and Professor Spofford is adding to his public service of this character inasmuch as he has but recently finished his work with the committee in Cambridge on a proper system of taxation for the city.

In considering the railway terminal facilities of Boston, Professor Spofford will have the advantage of a fine series of observations and tabulations made by Technology students and by the Electrical Research Laboratory which has considered many phases of the transportation problems in its work on the efficiency of motor trucks.

Bequest to Tech

By the will of the late William Whitman Hodges of Brookline, which was recently filed, the Institute of Technology and the Y. M. C. A. will divide a bequest of $100,000 on the death of the wife of the testator, who is to receive the income of this amount during her lifetime. Among the other beneficiaries are Dartmouth College, $25,000; Boston Floating Hospital, $25,000; the City Missionary Society, $10,000, to be used in summer recreation for the poor; Boston Y. M. C. U., $10,000, to be used for country week; Salvation Army, $10,000, to be used for Christmas and Thanksgiving dinners, and a number of other smaller legacies.

WELL WORTH READING

Class news this month presents an unusual symposium—Letters from Tech men in foreign lands the feature

The class news this month is largely devoted to letters from Tech men living outside the United States. Those who have the opportunity will certainly find it most interesting to glance through the class news and read these letters.

In the '04 news is a letter from H. K. Richardson who is engaged in establishing a trade school in connection with the local Chinese Young Men's Christian Association at Chengtu, China. Prof. W. H. Pickering, '79, is located in the island of Jamaica, in charge of the Harvard Astronomical Station at Mandeville. In a letter from H. L. Clark, '09, who has spent three years in railroad work in Bolivia, there is a description of his experiences. One of the railroads on which he was engaged crosses the main range of the Andes at an elevation of nearly 16,000 feet. His story is well worth reading. A letter from Ohunki of the same class tells of his work as engineer in the Naval dock yard at Kure, Japan. A letter from Roberts, '00, who is metallurgist with the Mt. Lyell Railway Company, Queenstown, Tasmania, is of interest. This plant is the home of "Pyntic" smelting. A letter from Cooke of the same class, who is at the Isthmus of Panama, is also interesting. In the '84 class news is a short description of the speed boat *Tech Junior* owned by T. Coleman du Pont, which was the winner of the American Power Boat Association challenge cup for the one mile championship last August. The notes of the class of '93 describe Solomon's process for detecting seed pearls in oysters by the use of radiographs. Franklin Osborne, 2d, '11, tells of his experiences in the Braden Copper Company's camps in the Andes. Another interesting letter comes from T. S. Killion, '11, of Nanking, China. M. L. Fuller, '96, is achieving international reputation as a geologist; he has been a year and a half in China engaged in a geological exploration for a large American corporation. William B. Faville, '96, is one of the three architectural commissioners forming the executive architectural council for the Panama Exposition. Pierre du Pont is one of the

incorporators of the du Pont de Nemours Powder Company, having a capital of $240,000,000. W. R. Whitney, '90, is a member of the Naval Advisory Board headed by Thomas A. Edison. The correspondence from the class of 1914, one year out of the Institute, is of particular interest.

These are a few items taken at random from the class news, and there are many more equally important all through the hundred pages which we print this month.

An Appreciation of Professor Ware

The following letter from A. D. F. Hamlin, '78, of Columbia University, was received too late to be included in the appreciation of Professor Ware, printed in the July REVIEW:

I thank you for the opportunity to say a word about our beloved Professor Ware, though the memories and impressions of thirty-nine years of acquaintance with him are too many and deep to be compressed into a paragraph. Indeed I hardly know where to begin, where to stop, or what most to emphasize, even in the briefest outline of these memories. I was officially his pupil for but one year—1876–77—but that year left upon me the ineffaceable impression of his stimulating personality. For twenty years I was associated with him as a subordinate and colleague at Columbia, and found myself still his pupil, for the mere contact with his wide-varying, alert mind was a constant thought-provoking, mind-awakening experience. The breadth of his culture and the refined taste that controlled all his words, judgments and actions; the purity and unselfishness of his life; the loftiness of his principles and his unflinching fidelity to them; the quaint and genial humor that sparkled through his conversation and his lectures alike; his greatness and his humility, his wisdom and his simplicity—how could a man live for twenty years in contact with these influences and not feel that the passing away of their possessor has dimmed the light of the world about him?

At the recent exercises in connection with the induction of Dr. John Henry MacCracken as president of Lafayette College, Dr. Henry Fay, professor of analytical chemistry at the Institute of Technology, and an alumnus of Lafayette College, was given the degree of doctor of science.

CULTIVATING THE SOCIAL SIDE

Many kinds of original entertainment provided by local associations — Summer activities are now general — Preparing for the Great Reunion next June

TECHNOLOGY CLUB OF NORTHERN OHIO.—"A Big Time" characterizes the summer meeting of the Technology Club of Northern Ohio held at Congress Lake Country Club, Saturday, July 10, 1915.

The plans for the outing and entertainment were undertaken and admirably carried through by the Akron boys. The contingent from Cleveland was met at the Akron Union Station and whisked away in automobiles, jitney buses, carry-alls, Seeing-Akrons, and cycle-cars to beautiful Congress Lake, about twelve miles south of the "Rubber City." Strickland, '98, made the trip from Cleveland to Akron in a new Peerless car of his design, faster than Pennsylvania Railroad train time.

Arrived at the Country Club, coats were shed and straw hats were exchanged for special outing caps provided by the committee. A group of energetic Akron boys fell upon the party and soon started the ball rolling to say nothing of eggs and other things. This group was known as the Sports Committee, and was made up of the following men: R. A. D. Preston, '10; C. R. Johnson, '11; L. G. Odell, '11; J. H. Dunlap, '11; W. W. Sanders, '00; H. S. Alexander, '11.

A real honest-to-John Athletic Carnival was staged between the rival representatives of Cleveland and Akron. Contests waged fast and furious and resulted in Cleveland winning by an egg, the final score being 14½ for Cleveland to 11 for Akron.

In the First Event of the program, Gould, '10, and Stevens, '11, of Cleveland, defeated Coey, '06, and Dodge, '10, of Akron, at tennis, by the score of 4–6, 6–4 and 6–4. At the same time, Sears, '92, and Treat, '14, of Akron, defeated Bowers, '09, and Rowley, '12, of Cleveland, in straight sets 6–1, 6–0 and 6–2. Finals went to Sears, '92, and Treat, '14, for 6–2 and 6–4, Akron receiving 5 points and Cleveland 2½.

In Event 2, Odell, '11, and Ferris, '08, of Akron, were defeated by Hopkins, '97, and Cady, '01, of Cleveland, in a foursome of

golf, this netting Cleveland 3 additional points. Spicer, '13, and Merryweather, '96, also ran.

L. A. Roby, '75, of Cleveland, again demonstrated his bowling ability in Event 3, making the high score for the day and leading the Cleveland team, composed of Roby, '75, Danforth, '98, and Carlisle, '10, to victory over the Akron team made up of Partridge, '12, Pushee, '11, and Alexander, '11, thus adding 3 more points to Cleveland's score.

The relay race, Event 4, was a walk-over for the Akron team composed of Sanders, '00, Hale, '08, G. S. Gould, '07, and Dinsmore, '14. Each man ran 110 yards. The Cleveland team was composed of Reed, '13, Strickland, '98, Eicher, '12, and Patrick, '94. This event netted Akron 4 points.

Event 5 was scheduled as a fat man's race but all the fat men kicked on the extreme heat of the day and insisted on sticking to the shade. It was generally conceded that E. R. Hall, '08, would have won the event by an extra belt notch anyhow.

In the Sixth Event, Reed, '13, of Cleveland and Schar, '12, of Akron, fought to a draw in a strenuous cock fight. Each emerged from the ring perspiring and dirty without having secured an advantage over the other. Dinsmore, '14, of Akron, however, took two out of three bouts from Wright, '13, of Cleveland, thereby winning 2 points for the Akron contingent. For the benefit of the uninitiated it may be said that a cock fight consists of setting two men on the ground with their legs doubled up jackknife fashion in front of them, their hands tied around their ankles and a bar thrust through under the knees. The object is to bunt the opponent out of a six-foot circle.

In Event 7, the egg race, Cleveland made a clean sweep. Strickland, '98, nosed out his teammate, Dates, '94, on the home stretch, and Pratt, '98, steam-rollered a strong third in with his egg still intact. The Akron representatives, Alexander, '11, Keith, '14, and Hanchett, '15, all dropped their eggs and were disqualified. The victory was a tribute to the scientific farming methods pursued by the Cleveland aggregation.

Following the program many of the boys went into the lake for a swim and there was much excitement and a big rescue act when a group of some twelve or so by their combined efforts sank the boat from which they were diving. The big rescue was supervised by Naval Architect Danforth, '98, with Electrical

Engineer Dates, '94, as his power plant, both representatives of the Case School Faculty.

The 55 men in attendance at the meeting sat down at a long table on the spacious veranda of the club overlooking beautiful Congress Lake. A goodly feast followed with the usual mirth, singing, and good fellowship which attends the meetings of this organization.

The evening was concluded with a long Tech cheer for President P. W. Litchfield whose fellowship and hospitality have won for him a high place in the regard of his fellow Tech men.

Among those present were the following: S. C. Coey, '06; A. T. Hopkins, '97; W. W. Sanders, '00; B. L. Dodge, '10; R. S. Schar, '12; C. W. Brown, '99; G. E. Merryweather, '96; P. W. Litchfield, '96; L. G. Odell, '11; G. W. Bowers, '09; W. R. Hanchett, '15; W. P. Keith, '14; A. D. Wheeler, Jr., '15; R. A. D. Preston, '10; H. Smith, '87; R. W. Pratt, '98; H. S. Alexander, '11; R. H. Danforth, '98; F. E. Cady, '01; K. B. Kilborn, '11; W. H. Eager, '04; K. W. Reed, '13; C. R. Johnson, '11; A. W. Spicer, '13; R. W. Ferris, '08; A. M. Eicher, '12; H. B. Pushee, '11; H. E. Morse, '15; E. R. Hall, '08; J. C. Holmes, '14; H. W. Treat, '14; G. S. Gould, '07; A. A. Gould, '10; D. R. Stevens, '11; A. D. Hatfield, '96; H. B. Dates, '94; L. A. Roby, '75; H. H. Partridge, '12; C. M. Sears, '92; L. E. Wright, '13; A. L. Patrick, '94; J. W. Kittredge, '94; T. W. Carlisle, '10; K. A. Scott, '13; R. P. Dinsmore, '14; A. E. Hall, '14; C. E. Doud, '14; J. E. Hale, '08; C. B. Rowley, '12; W. R. Strickland, '98; J. H. Dunlap, '11.—*Don Stevens*, '11, *Secretary, Goodyear Tire & Rubber Co., Akron, O.*

Washington Society of M. I. T.—During the summer season two trips were held. The first was on June 26, when a mobilization was called for a trip by boat to Marshall Hall. Mobilizations of other organizations had been called for the same day it happened and, the full crowd appearing, exceeded the capacity of the boat so that about 250 were left behind. Unfortunately, in this number were Techites to the number of ten or more. On roll call at Marshall Hall the following were present: Bailey, '06, and wife; Black, '10, and wife; Castleman, '15, and sister; Dean, '00, wife and two "Techlets;" Dodge, '07; Gannett, '17; Lauders, '05; Lang, '09, and wife; Loomis, '97, and wife; Merrill, '05 and wife; Phelps, '99, and wife; Shneider, '92; Stevenson, '07, and wife;

Swanton, F. W., '90, and Woodward, '17, and friend. (I could have arranged these one name to a line *à la* Hotel Register and give the impression we were some big society but was afraid of being charged space rates by the REVIEW.)

Known wounded on the dock in Washington were: Hyde, '00; Rayner, '07, and wife; Sulton, '08, and wife; Swanton, W. I., '93, with three "Techlets"; and Thurber, '00.

The salt air had done its work and, after scouting parties had captured an advantageous position, mess was called and the real attack was under way. Our forces were successful in forcing a retreat of the remnant of the engaged force to the lunch basket, but this remnant was completely put to rout on the trip back.

A baseball game was indulged in under Pres. Merrill and Dr. Phelps as captains. The ladies' playing was the feature of the game on both sides. The outcome is doubtful and both sides claim victory. Inasmuch as the umpire was catcher on one of the teams and by his playing gave his opponents as much as his decisions took away, the writer is neutral as to the merits of the claim of either side. Spontaneous combustion singing was a feature of the return trip.

On July 22, thanks to the offer of "Commander" Barker, '98, a trip was taken in his 50-foot power cruiser to Mockley Point down the river, where the party landed and roamed around; some indulged in baseball while a few braved the waters of the Potomac. Lunch was served on the boat. The trip back in the moonlight was delightful and the breeze blew in a direction which made the passage of Alexandria uneventful. What more could be asked for a pleasant trip? Mrs. Barker, as skipper and chief navigating officer of the *Sulky*, performed her duties in an efficient and seamanlike manner. All who went enjoyed themselves and say "Three cheers for the Commander and the Skipper." One thing we haven't found out is why the boat has the name she has; she did not exhibit any traits such as are thought to go with such a name. How about it Mr. Commander? The officers and first cabin list is as follows: Commander, Barker, '98; skipper, Mrs. Barker; stewards, Holcomb, '04, from the home of Anhauser-Busch, and temporarily in our midst, Collins, Jr., '88, and Lauders, '05; first cabin, Black, '10, and wife; Burnap, '06, and Miss Moore; Gammons, '06; Hersey, '09, and Miss Cobb; Ranno, '89, wife and son; Rauber, '14; Richardson, '10; and Wells, '11, and wife.

The fall activities opened with a meeting on October 29 at the University Club, at which the entertainment committee for that meeting presented a lively, mysterious and interesting program. Details will be given in a later issue of the REVIEW.

Meetings are planned at intervals throughout the year, and the different committees in charge of the different meetings promise interesting doings, and we know the local alumni will attend and get great enjoyment from the program planned. The annual meeting and election of officers is expected to take place in December, and it is hoped all local alumni will make an especial effort to attend. It is not going to be all business, and a good time is assured.

The committee considering a Tech club house in this city have been busy this summer and letters will have been sent to the members of the last ten classes in town, by the time this REVIEW reaches you, to see if a sufficient number would be interested. It is thought such a house is a likely possibility and any interested are urged to get in touch with either Dr. E. B. Phelps, U. S. Public Health Service, or Mr. William H. Keen, Washington Steel & Ordinance Company, Washington, D. C.

Alumni moving to or leaving Washington will confer a favor if they will notify the secretary, and visiting alumni are always welcome to our meetings and can learn of them by communicating with the secretary, or any of the officers.—*H. G. A. Black*, '10, *Secretary, U. S. Patent Office, Washington, D. C.*

INTERMOUNTAIN TECHNOLOGY ASSOCIATION.—On Friday night, July 9, at 7 o'clock, a dinner was held on the roof garden of the Hotel Utah. Professor Charles E. Locke, '96, of the mining department of the Institute, who is making an extended trip through the west, was guest of honor. The dinner was informal and very much enjoyed by all present.

After dinner, a meeting was held in one of the private dining rooms of the hotel.

An election of officers was held and the following members were unanimously elected as officers of the association: C. S. McDonald, '99, president; G. S. Humphrey, '10, vice-president; Walter Trask, '06, secretary-treasurer, care of University Club, Salt Lake City, Utah.

After the business meeting, Prof Locke gave an interesting in-

formal talk about Institute affairs, particularly touching on the new buildings and relations with Harvard.

The following members of the association were present: John Damon, '05; L. T. Cannon, '96; O. P. Scudder, '03; E. P. Fleming, '01; Walter Trask, Jr., '06; O. H. Gray, '97; J. W. Maxwell, R. E. Wells, Jr., '14; S. Q. Cannon, '99; B. W. Mendenhall, '02; V. S. Rood, '07; Marion Foss, '09; G. S. Humphrey, '10; H. H. Burton.—*Owen H. Gray, '97, Secretary-Treasurer, Salt Lake City, Utah.*

Detroit Technology Association.—Belle Isle was the scene of this year's outing of the Detroit Alumni Association on Wednesday afternoon, August 18. The Detroit Boat Club was used as headquarters, and the privileges of the beautiful club were enjoyed by us all while on the island. Towards the middle of the afternoon games were started on the island near the club house. The first event was a thread and needle race, and George V. Pottle, '01, was able to thread Mrs. G. R. Anthony's needle just a little quicker than the rest.

The second event was a ball-throwing contest, for ladies only, with a big, soft baseball. After a close contest, Mrs. H. T. Winchester was given the prize for making the longest throw. While the ball-throwing event was being held, some big, soft pine planks were put in place on tables for the nail driving contest. This was the most interesting of all. Each lady had to drive home four two-and-one-half inch nails, and several new methods of driving nails were divulged during the performance. Mrs. G. R. Anthony won the prize for this.

An egg race came next, and Miss Rhodes won it in the final round in a walk, as her competitors, although considerably ahead of her, forgot the necessity of keeping the eggs on their spoons.

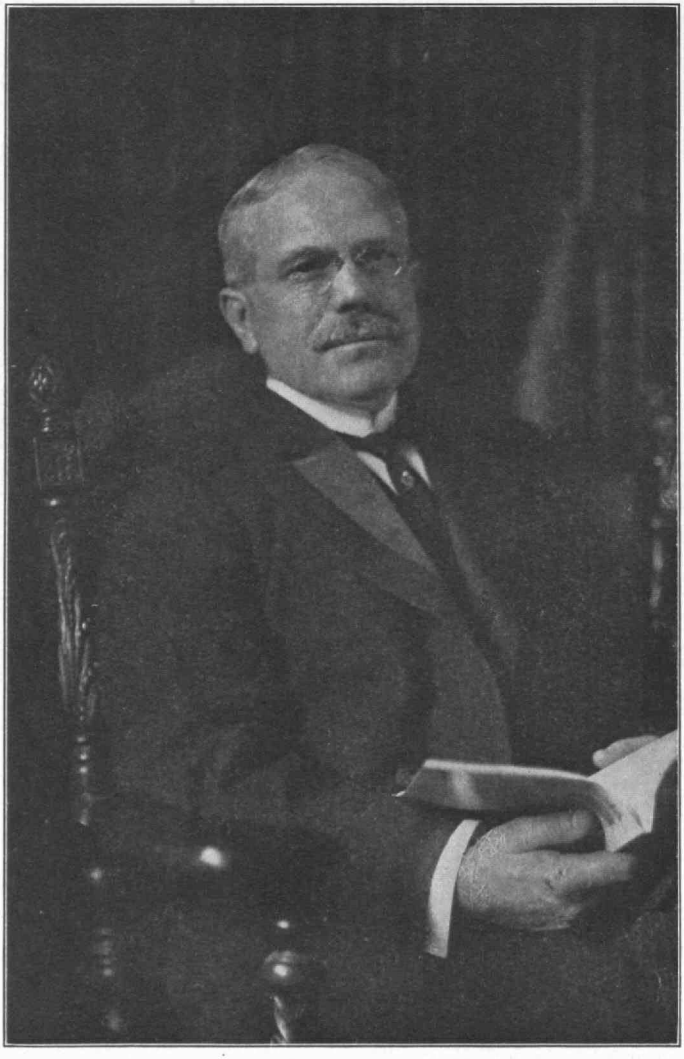
The next sport was a ball game—with a soft ball. It was intended to have this for the men only, but the ladies were so interested in things by this time that they insisted upon playing too, so we had some mixed baseball that was highly successful. Captain H. E. Allen, '08, and his fair teammates finally won from Captain Currier Lang's, '04, side, 7 to 5.

After the ball game everyone was ready for dinner, which was served at the Boat Club. Sixty-two persons sat down at the tables, each wearing a small red and grey ribbon. Following the dinner we adjourned to the dance hall from which we had already

heard strains of music. Nearly everyone danced and several circle two-steps served to get everybody thoroughly acquainted. For those who did not dance, there were the wide, cool verandas overlooking the river, the island, and the city in the distance.

The last launch at eleven o'clock brought the party to a close. After joining in "The Stein Song" while crossing the river, everyone was agreed that the outing was thoroughly enjoyable, and that a similar affair will have to be held next year. The following persons were present: Wm. R. Kales, '92; George V. Pottle, '01; George R. Anthony, '98; D. V. Williamson, '10; L. E. Williams, '02; Currier Lang, '04; Henry T. Winchester, '03; R. F. Hill, '10; Emmet Dwyer, '05; H. C. McRae, '07; Irwing P. Kane, '10; Chas. B. Page, '99; Horace E. Allen, '08; Milton W. Pettibone, '16; O. W. Albee, '93; Howard S. Currier, '13; Harold W. Barker, '14; Horace G. Lobenstine, '92; J. S. Rogers, '81; J. H. O'Brien, '10; Preston Morris Smith, '04; Minot S. Dennett, '11; W. C. West (Chicago), '11; J. S. Barnes, '08 (Syracuse); J. H. Dennedy, '08; T. F. W. Meyer, '11; A. F. Shattuck, '91; Howard T. Graber, '03; Edgar Menderson, '13; John W. Livingston, '14; Herbert D. Swift, '15; Frank H. Davis, '04; Kenneth Greenleaf, '11; Murray Hastings, '13; Marvine Gorham, '93; Mrs. G. V. Pottle; Mrs. G. R. Anthony; Mrs. D. V. Williamson; Mrs. L. E. Williams; Mrs. Currier Lang; Miss H. J. Allen; Mrs. H. T. Winchester; Mrs. R. F. Hill; Mrs. Chas. B. Page; Mrs. H. E. Allen; Miss Burrows; Mrs. and Miss Albee; Miss E. Crusoe; Mrs. H. W. Barker; Mrs. J. S. Rogers; Mrs. J. H. O'Brien; Miss Catherine Gunnip; Miss Marguerite Dennedy; Mrs. T. F. W. Meyer; Mrs. A. F. Shattuck; Mrs. H. T. Graber; Mrs. F. H. Davis; Mrs. K. Greenleaf; Miss Rhodes; Miss Clark.—*D. A. Williamson*, '10, *Secretary-Treasurer, Detroit Edison Co., Whitney Bldg., Detroit, Mich.*

Technology Association of Oregon.—We had the pleasure of entertaining at luncheons given by the Oregon Technology Alumni Association, Professors Dewey and Swain. The luncheons were given at the University Club and were well attended. Professor Dewey gave us a very pleasant and instructive talk on the engineering administration course and you may be assured found a very interested and attentive audience, so much so in fact, that I am afraid a great many office appointments were neglected until late in the afternoon. The second luncheon given at the same



JAMES G. WOOLWORTH, '78

place in honor of Professor Swain was equally interesting and instructive. Various topics of interest to all Technology men were informally discussed. These occasions have proved so pleasant that it is our sincere wish that any others connected with the Institute coming our way will let us know when they are going to be in our city, and I assure you we will try to give them a good time.—*J. G. Kelly, Jr.*, '14, *Secretary-Treasurer, 711 Pittock Block, Portland, Oregon.*

Technology Club of Rhode Island.—Mr. James G. Woolworth, '78, past president of the Technology Club of Rhode Island, and a prominent and active alumnus, died of heart trouble at his residence, at 220 Waterman street, Providence, on June 22, 1915, after four weeks' illness.

Mr. Woolworth was born in Westfield, Massachusetts, August 24, 1856, the son of Joseph and Mercy D. (Sage) Woolworth. He attended the public schools of that town, graduating from the Westfield High School, and then attending Oberlin College for a year previous to entering the Institute. He graduated in the class of 1878, and entered the employ of the Silver Spring Bleachery in Providence, where he remained a short time, then going to Norwich, Conn., for three years, afterward returning to Providence, where he spent the remainder of his life.

For the past twenty-six years, Mr. Woolworth was superintendent of the John D. Lewis Dye Works, serving in that capacity until his last illness.

As a deacon in the Beneficent Congregational Church of Providence, he was active in church work, being a member for more than twenty-five years. Funeral services were held at his home and burial was in Swan Point Cemetery.

On October 24, 1883, Mr. Woolworth married Lillian Florence Rawson, youngest daughter of Henry M. and Harriet E. H. A. Rawson, of Providence, who, with his mother, Mrs. Joseph Woolworth, survives him. He also leaves a sister, Miss Ella D. Woolworth, and two brothers, Rev. William S. Woolworth of Tallman, N. Y., and Edgar J. Woolworth of Kearney, Neb.

Mr. Woolworth was prominently identified with the revival of the Technology spirit in Rhode Island, and was the first president of the reorganized local alumni association in 1910, serving several years, until his health compelled him to relinquish the office. Mr.

Woolworth's personality will be long remembered by members of the Rhode Island Club, for his genial character and impersonal motives, and his loyalty to Technology is best exemplified by the fact that he missed but one reunion of his class since his graduation.

Mr. Raymond E. Cranston, 1906, died June 25, 1915, at his home, 43 Lawn avenue, Providence, of spinal trouble, after several weeks' illness. Mr. Cranston was employed by the Massachusetts Mutual Fire Insurance Company, for about a year after graduation, later being associated with John R. Freeman in Providence, where he was employed until the time of his death. A wife, Ethel Linwood (Jenkes) Cranston, and a brother, Ira Cranston, survive him.

The club has also lost a third member, Mr. Robert E. Whipple, '12, employed by the Rhode Island Tool Company, who died in March of this year.—*Clarence L. Hussey*, '08, *Secretary, 1547 Smith Street, Fruit Hill, Providence, R. I.*

INDIANA ASSOCIATION, M. I. T.—On June 26 the association held its annual picnic at Brother Bill's deserted farm, an old tumble-down place a few miles from town.

About twenty of us drove out, discovering the place by means of convenient signs posted along the way, the entrance to the farm being designated "Boylston St." and the various farm buildings placarded, "Chapel" "Walker Bldg." "Rogers Steps," "Mrs. C. P. Hall" etc.

Trap shooting, pitching horse shoes, clipping Rockwoods' "Airedale" and a little roulette occupied the time until Alec Holliday '99, announced dinner.

This meal was cooked by the committee, and the club steaks broiled over the huge fireplace, fried potatoes, coffee and a crate of pies, made a unique banquet. After the dishes were washed, we were entertained by Messrs. Jilson, '01, and Rockwood, '01, with some classy vocalism, with victrola assistance.

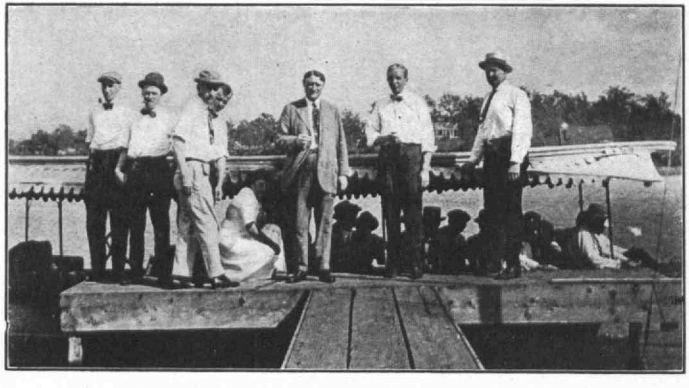
Monthly luncheons have been held during the summer at the University Club, and will be continued through the year.

Burt Richards, '99, has removed to Boston.

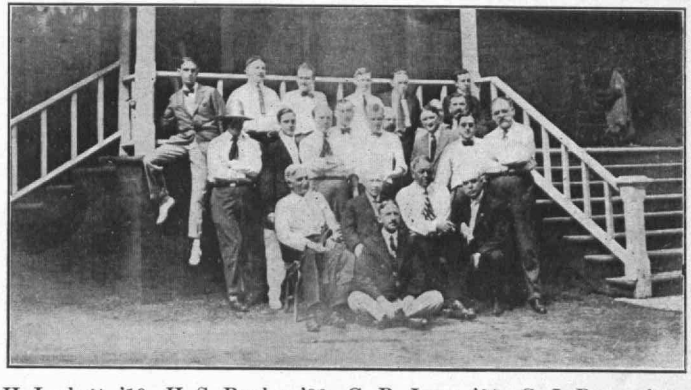
Club members have received cards announcing the marriage of Charles Parkman Rockwood, '01, to Miss Amanda Elizabeth Zimmermann, at Geneva, Ill., September 25.—*W. B. Parker*, '88, *Secretary, 805 Board of Trade Bldg., Indianapolis, Ind.*

M. I. T. OUTING, GIFFORD HOUSE, CHANNEL LAKE, ILL.

J. I. Banash, '06, G. B. Jones, '05, K. Lockett, '02, C. B. Vaughan, '12, Mrs. R. E. Schmidt, R. E. Schmidt, '87, F. F. Fowle, '99, H. S. Pardee, '09



C. E. Lord, '98, H. W. Nichols, '93, W. T. Blunt, '74, H. Lockett, '10, R. E. Schmidt, '87, G. B. Jones, '05, K. Lockett, '02



H. Lockett, '10, H. S. Pardee, '09, G. B. Jones, '05, C. J. Bacon, '00, Gibson, R. Ellis, '09; second row, T. E. Tallmadge, '98. G. M. Proudfoot, '04, G. P. Palmer, '04, J. I. Banash, '06, C. B. Vaughan, '12, H. W. Nichols, '93, R. E. Schmidt, '87, F. F. Fowle, '99, A. J. Wells, '96, R. M. Phinney, '04, H. M. Montgomery, '79; front row, W. T. Blunt, '74, F. H. Pond, '74, L. Green, '87, C. E. Lord, '98; in front, K. Lockett, '02

THE TECHNOLOGY CLUB OF BRIDGEPORT.—At the first annual meeting of the club, the officers for the ensuing year were elected as follows: President, H. R. Philbrick, '06; treasurer, P. W. Dalrymple, '12; secretary, W. A. Swain, '15, and F. C. Blanchard, '91, member of the Alumni Council.

One of our members has been lost to us. R. B. Pulsifer, '12, died early in the morning of the 29th of September.—*Wilbur A. Swain, '15, Secretary, The Criterion Club, Bridgeport, Conn.*

NORTHWESTERN ASSOCIATION M. I. T.—Owing to rain throughout the summer, the annual outing was postponed from time to time and was finally held Saturday and Sunday, September 11 and 12. The outing took the form of an automobile excursion to Channel Lake, near Antioch, Ill., about sixty-five miles northwest of Chicago. The scheme of having the outing last more than a day was an innovation, but proved to be a very successful experiment. About twenty-five men made the trip in machines, starting Saturday immediately after lunch from the Chicago loop district, and arriving at the scene of festivities anywhere from six o'clock to infinity. One car failed completely to complete the journey, owing to a broken frame.

Richard E. Schmidt, '87, has a summer cottage adjoining the hotel at the lake, and in view of his personal efforts and those of his family, the outing was made unusually enjoyable. Those who arrived at a reasonable hour Saturday night played cards until the arrival of the belated ones, after which the party adjourned to Mr. Schmidt's cottage, where a midnight supper was served. Mr. Schmidt's daughter being a recent Wellesley graduate, conversation naturally drifted around to reminiscences of the Wellesley experiences of M. I. T. men. Many amusing forgotten incidents were brought to light.

Sunday was one of the few warm, pleasant days of the entire season, as a result of which there were swimming parties before breakfast, dinner and supper. In the intervals between the swimming parties there was target practice in the morning and a trip around the chain of lakes in a launch in the afternoon.

The return trip Sunday night was equally filled with adventure, as there were many minor accidents, largely "tiresome troubles," one machine being left finally at Fort Sheridan, the occupants returning by trolley. The outing was unanimously voted the

most successful one held in recent years and, in view of the threatening weather Saturday, the attendance was very satisfactory.

The various college secretaries have been making an effort for some time to secure more coöperation between different college alumni associations in Chicago. Pursuant to this end, an intercollegiate outing was held Saturday, September 25. Part of the grand stand at the Federal League Ball Park was reserved for the intercollegiate men and those who had machines formed in Grant Park as an automobile parade and ran out to the game with their friends, the cars being decorated with college banners. Two games were played; the first between teams of old college stars, representing the East and the West, the western team winning 5 to 1 in five innings. The regular game between Chicago and Brooklyn followed the college game, after which the crowd adjourned to the Bismarck Garden for dinner.

Plans for stimulating interest in the weekly luncheons are now under way. It is the intention to continue the weekly addresses, which were stopped during the summer months. The weekly luncheons have continued right through the summer, however, and have been fairly well attended.—*George B. Jones, '05, Secretary, 1445 Monadnock Block, Chicago, Ill.*

Dayton Technology Association.—The local Tech club and its families met for an out-of-door dinner on the evening of July 30 at the Hills and Dales Club. Arrangements had been made for a picnic, also, in the afternoon but pressing business engagements detained so many that plans for this were given up. However, forty-six were served at dinner and the usual Tech enthusiasm prevailed. Among those present, with or without their families, when yours truly took up the silver collection, were: Custer, '13; De Witt, '12; Gerber, '97; Kimball, '98; Kramer, '98; Pretzinger, '12; Putnam, '08; Spiehler, '08; Wells, '92; Wuichet, '89; Smith, '02. The out-of-town guests present were Hildabolt, '75, of Germantown, and Montanus, '05, of Springfield.—*J. E. Barlow, '05, Secretary-Treasurer, City Building, Dayton, Ohio.*

The Tech Club of Boston has the privilege of the Engineers Club, 2 Commonwealth avenue, during the coming year. The club retains its own organization with the following officers: President, S. C. Prescott, '94; vice-president, Dwight Porter; secretary, R. S. Williams, '02; treasurer, Andrew A. Mac-

lachlan, '96.—*Robert S. Williams, '02, Secretary, Mass. Inst. of Tech., Boston, Mass.*

TECH CLUB OF THE UNIVERSITY OF ILLINOIS.—At the last meeting of the club before the close of the college year in June, A. C. Willard, '04, was elected president and the writer, secretary and treasurer of the club for the ensuing year. In June those of us still here welcomed Professor Charles E. Locke, '96, of the mining department of Tech, who stopped here for a day. An informal luncheon was given for him at the University Club to which the staff of the local mining department was also invited.

Dr. W. F. M. Goss, '79, dean of the College of Engineering, after two years' leave of absence spent as chief engineer for the Chicago Association of Commerce Committee on smoke nuisance and electrification of railway terminals, has returned to his work at the university.

Dr. F. H. Newell, '85, formerly head of the United States Reclamation Service, has taken the chair in civil engineering here, left vacant by the resignation of Professor I. O. Baker.

Paul Hansen, '03, formerly engineer of the State Water Survey, has been made chief engineer of the State Board of Health.

At the first meeting this fall those of us who had been fortunate enough to look across the Charles River basin this summer found that we were unanimous in our appreciation of the new Tech.—*E. A. Holbrook, '04, Secretary-Treasurer, 915 W. Green Street, Urbana, Ill.*

THE CINCINNATI M. I. T. CLUB.—Through the courtesy of Col. Robert West, the local alumni of the Boston "Tech" and their wives held their annual outing at Ryland, Ky., where Colonel West has a summerhome. Baseball and athletics made up the program for the men. Those going out were Messrs. and Mesdames Herman Lackman, '05, Clifford Woodward, '03, Frederick Garber, '03, Harry Lane, '77, Stanley Hooker, '97, John Hargrave, '12, R. W. Proctor, '94, Hall Feemster, Jr., '06, Harry Pugh, '97, Charles Merrell, '88, Ed. Kruckemeyer, '11, F. W. Willey, '08, S. M. Manley, '00, Mr. James Stanwood, '75, Mr. Stewart Miller, '07. The officers of the club are: President, John M. Hargrave, '12; treasurer, Charles R. Strong, '11; secretary, Edward H. Kruckemeyer, '11; alumni representative, H. N. Dawes, '93.—*Times Star.*

Technology Club of China.—The monthly luncheons of the club, which are held on the first Saturday of every month at the Carlton Café at 12.30, are well attended by the Tech men in this vicinity who are always glad to meet new comrades in this part of the world and show them the ropes. The following notes will give an idea of what some of the Tech men are doing:

W. W. Stevens, '98, is constructing engineer for the Standard Oil Company in North China, and is one of the greatest hustlers in the Far East. Stevens has reorganized his department and is doing a great deal of construction work here. Although he is a very busy man, he finds time to be president of our association and has never missed one of the luncheons.

Frederick R. Sites, '99, is resident engineer for the United States Steel Products Company in North China. Both Stevens and Sites, who travel a great deal in the interior, have met a number of Tech men who have given them grand receptions. The field for American engineering supplies is largely undeveloped out here, and we believe it will pay a few more Tech men to get into these lines in this territory.

Frederick W. McIntyre, '02, is with Anderson, Meyer & Company, a large import and export house and agents in China for the General Electric Company.

E. T. Williams, '09, is with the Chinese customs and works so hard we don't see much of him. Williams was recently married.

Harold C. Faxon, '08, is with the Standard Oil Company in the Lubricating Oil Department, selling asphalt for roads and roofs.

Tong Pao-Tung, '12, is assistant engineer with Whangpoo River Conservancy Board. This board has charge of the conservation of the Whangpoo River on which Shanghai is situated, this river being one of the largest in China. Tong is with us every meeting and is a very enthusiastic Tech man.

Just at present I am trying to hold down the job of manager of the China Realty Company, Limited, as that official is away in the States. We are building a large number of buildings and handle all the real estate transactions in town. We also sell American doors, windows, hardware, etc.

At the University Club dinner this year we had five Tech men sitting together. We gave a few "We are happy . . ." to liven things up. We seemed like a freshman class compared with the rest of the bunch, and all the college men here think that Tech-

nology must be a pretty lively place.—*William A. Adams*, '08, *Secretary-Treasurer, 39 Nanking Road, Shanghai, China.*

St. Louis Society of the M. I. T.—Professor Charles M. Spofford's ('93) visit to St. Louis with the Boston Terminal Railroad Commission, August 24, was made the occasion for a gathering of St. Louis alumni at the City Club, in connection with the club's noonday lunch for the commission. The Technology men occupied a long table next to the speaker's table, and after lunch adjourned to a side room for a chat with Professor Spofford. The principal topic discussed was the alliance with Harvard University, the details of which were explained by Professor Spofford in a manner to convince those present of the wisdom of the undertaking. The following were present: J. J. R. Bristow, X, '14; E. L. Brown, Jr., II, '08; E. A. Downey, VI, '13; E. A. Garrett, II, '03; A. M. Holcombe, II, '04; M. Desloge, IV, '12; Littlefield, '16; T. A. O'Rielly, I, '13; S. F. Rosenheim, IV, '93; C. E. Smith, I, '00; G. R. Wadleigh, II, '97; and J. A. Willard, II, '09.—*A. M. Holcombe*, '04, *Secretary, 510 Pine Street, St. Louis, Mo.*

Rocky Mountain Technology Club.—At a dinner of the Rocky Mountain Technology Club held at the Shirley Hotel, Denver, Colo., in honor of Professor Charles E. Locke, '96, new officers were elected as follows: Dr. S. C. Lind, '02, as president, to succeed George D. Luther, '07; and F. W. Horton, '04, secretary, care of Bureau of Mines, Foster Building, Denver, Colo.—*M. W. Hayward*, '06, *986 So. Gilpen Street, Denver, Colorado.*

New Haven, Conn.—Boston Tech graduates dined at the old Heidelberg June 24. "Construction Costs" was the subject of a talk by Dan Patch, and R. L. Parsell, '14, spoke on shrapnel. Those present included: Charles E. Dodge, '12; R. Howard Annin, '14; M. G. Meriam, '05; Herbert G. Shaw, '13; Channing Turner, '08; Claude E. Patch, '02; Roy L. Parsell, '14; E. M. Young, '11; H. M. Wilcox, '05; H. F. Daley, '15; N. McL. Sage, '13; W. Elmer Richardson, '12; Lyle Richardson, '14.—*New Haven Register.*

Technology Club of Chile.—The Technology Club of Chile was organized August last, at a dinner held at Rancagua, Chile. The following men comprised the charter members: W. L.

Stevens, '00; J. P. Chadwick, '06; R. F. Goodwin, Jr., '10; J. L. Bray, '12; Edmund E. Brown, '13; W. S. Conners, '14; and Franklin Osborn 2d, '11.

TECHNOLOGY CLUB OF NEW BEDFORD.—A miniature Plattsburg camp was the attraction at the New Bedford Technology Club Clambake at George H. Nye's ('85) country place, on Saturday, October 16. Enthusiasm, to put it mildly, was the dominant note of the whole affair.

A contest in kite flying was held before the bake and was won by the team consisting of King, '98, Swan, '97, and Earle, '06. After rations had been served, twenty men were drilled by Colonel Stetson, '99, and the long forgotten manual of arms was rehearsed to perfection. The judges' decision was, without question, a good one—C. F. Wing, Jr., '98, winning the prize, a sword and belt, *à la* 10 cent store. The method of reducing the squad by the judges, Messrs Pierce, '85, and Tillinghast, '70, was unique. First, every fourth man fell out, next every even man fell out, and so on until the squad was reduced to its least common divisor.

Next, was the tent-raising of two 8 x 10 foot army tents. The squad composed of King, '98, Wade, '08, Weeks, '08, and Hicks, '06, put up their tent in winning time. Two teams of trench diggers strove to throw up a trench so as to be invisible to the umpire in the shortest time and were won by Wade and Hicks after Wade had been side-swiped with a pick-axe which lent a gory phase to the situation.

Four teams of five men each indulged at rifle practice at forty-five yards with high powered (22) rifles. The team composed of Burke, C. F. Wing, Earl Robinson, and Hicks were awarded the prizes of nickel plated pop-guns.

Altogether it was a very successful affair, and every Tech man taking part in it is better equipped for an army position.

Call on us when the time comes.

There were twenty-four present at the bake.—*Chas. F. Wing, Jr., '98, Secretary pro tem, New Bedford, Mass.*

TECHNOLOGY CLUB OF BUFFALO.—The first luncheon of the season for the Buffalo Tech Club was held on Friday, October 15 at the Buffalo Chamber of Commerce. Officers were elected as follows: President, H. L. Noyes, '90; secretary-treasurer, Ellery Earle Root, '08; Alumni Council representative, A. C. Anthony,

Clambake of the New Hampshire Association at Three Rivers Farm, Dover, New Hampshire, July 10

Technology Club of New Hampshire at Three Rivers Farm, Dover, N. H., July 10

'86.—*Ellery E. Root, '08, Secretary-Treasurer, With Buffalo Standard Ink Corp., Buffalo, N. Y.*

Tech Club of New Hampshire.—The fifth summer outing of the Tech Club of New Hampshire was by far the best and most enthusiastic of those held up to date.

Tech grads from all parts of New Hampshire with large delegation from the bordering state clubs—Massachusetts and Maine—gathered Saturday, July 10, 1915, at Three Rivers Farm, Dover, N. H., the home of our president, Edward W. Rollins, '71.

The day was all that could be desired, and the men arrived early, prepared to loosen up and make the occasion one to be remembered. Throughout the morning there was great enthusiasm which was especially pronounced on the arrival of guests, who were greeted by President E. W. Rollins, '71, assisted by Mr. and Mrs. Ashton Rollins, and the cheers of club members already gathered there.

A ball game was arranged between two improvised teams, and took place on the spacious lawn in front of the mansion where the ladies, assisted by Ike Litchfield, '85, cheered the players to unequaled vigor and skill. The rank decisions of the umpires were of course to be expected and added to the hilarity of the occasion.

The efforts of the ball game were such that both players and spectators felt the necessity of refreshments, which were found in ample abundance within the spacious mansion to which all retired, until the sounding of the toscin calling us to dinner.

The Tech club members and guests then lined up and marched in military order to the tables spread in sheltering pines near by. The scene here was very attractive, and was a picture which will linger in the memory of all present. The tables were tastily arranged in the form of the letter "T," and after being seated, the guests were polled off and it was found that sixty-five were seated, forty-five of this number being Tech club members, and the balance invited guests and ladies. The menu was very elaborate, finely cooked and served, and consisted of cantaloupe, steamed clams, lobsters, fish, bread, strawberry short-cake and coffee.

After the dinner came the feast of reason and humor under the able management of J. W. Rollins, '71, who acted as toastmaster and whose eloquence effervesced in all directions. After the report of Secretary Davol, President E. W. Rollins was introduced and

cordially welcomed the guests, and also extended an invitation for 1916. This was greeted with the M. I. T. yell, enthusiastically delivered. The following speakers were introduced by the presiding officer: Henry J. Horn, '89, president M. I. T. Alumni Association; I. W. Litchfield, field manager of the association, who read an original poem, which convulsed the gathering, and which is given herewith. Other speakers were Mayor Barrett of Dover, who welcomed the guests to that city; George B. Lauder, '89; John Ritchie, Jr.; C. H. Eames, '97, president Merrimack Valley Club; R. H. Lord, '05, of Gorham, Maine; Professor Taylor of New Hampshire College, and Montgomery Rollins, '89.

Following is Mr. Litchfield's poem:

TO THREE RIVERS FARM

Hail and farewell thou blest piece of geography,
Happily placed where we rest by the way,
Bounded by Rollinses, joy and good fellowship,—
Give back the heart you have stolen away!

Sadly I sing to thee, madly I cling to thee,
Cling to thy grub and thy pitch on my pants,
Cling to the swash of the ice in the shaker,
Cling to thy sisters and cousins and aunts.

Memories tender, sweet friends fat and slender,
You knife and you fork and you amorous spoon,
It's nullos without you, I'm crazy about you,
Farewell, oh you lobsters, farewell till next June.

Among those present were: From Boston—Henry J. Horn, '89, president M. I. T. Alumni Association; I. W. Litchfield, '85, field manager Alumni Association; J. W. Rollins, '71; Charles H. Johnson, '05; William Purley, '98; F. W. Goldthwait, '05; Andrew Fisher, Jr., '06; C. H. Palmer, '85; John Ritchie, Jr. From Lawrence—G. H. Bartlett, '95; Charles H. Eames, '97, president Merrimack Valley Club; R. A. Hale, '77. From Manchester—W. D. Davol, '06, secretary Tech Club of New Hampshire; N. S. Bean, '94; E. M. Belcher, '08; M. L. Bullard, '08; F. L. Flanders, '74; F. P. Hunt, '95; C. E. Pratt, '91; H. R. Perry, '10; R. O. Reed, '06; M. Sampson, '08; J. L. Warren, '08; J. L. Arnott, '74; W. Africa, '15; E. E. Griffin, LeRoy B. Gould, '04. From Concord—C. A. Hall, '08; L. L. Hall, '14; H. E. Everett, '00; C. B. Lauder, '89; Guy Swenson, '12; Omar S. Swenson, '03. From Dover—

E. W. Rollins, '79; F. W. Rollins, '81; Montgomery Rollins, '89; J. W. Goodwin, '11; L. P. Holt, '04; George E. Holmes, '98; N. E. Seavey, '99. From Portsmouth—A. F. Howard, '98. From Rye Beach—H. R. Sawyer, '99. From Greenland—E. S. Daniel, '88; S. S. Philbrick, '98. From Exeter—H. I. Clark, '09; A. J. Connor, '88. From Newburyport—E. M. Coffin, '05.

Invited guests were: Mayor Barrett of Dover, ex-Mayor Foster and son, Professor F. W. Taylor, Professor Fred Rasmussen, and Professor J. C. Kendall of the instructing staff of New Hampshire State College.—*Walter D. Davol*, '06, *Secretary-Treasurer, Amoskeag Bank Bldg., Manchester, N. H.*

Technology Club of Philadelphia.—A goodly number turned out for the first meeting in the Engineers Club, 1317 Spruce street, on Wednesday, October 6. Most of these took advantage of the privilege of dining together at the club house, adjourning afterwards to the billiard room where smokes and a lively competition among the pool sharks ensued. The entertainment was provided by E. S. Foljambe, '01, president of the club and managing editor of the Chilton Company, who, with the aid of colored slides, described a trip across the Cody Trail and through the Yellowstone. At the business meeting following, it was voted to give the Glee Clubs a most cordial invitation to come down for a concert in February, at the same time guaranteeing them the necessary support.

For the next meeting on Wednesday, November 3, Carlton E. Davis, '92, chief of the Bureau of Water, Philadelphia, is going to tell something about the problems connected with municipal water supply. It is hoped that all who can will plan to take supper at the club house before the meeting.—*George C. Lees*, '08, *Secretary, 326 So. Alden Street, Philadelphia, Pa.*

Technology Club of Fall River.—The Fall River M. I. T. Alumni Association held its first meeting of the season at the Quequechan Club, Tuesday evening, October 26. President J. E. Nute, '85, presided. Supper was served at 6.30, and after this Mr. Richard P. Borden, '86, outlined some of the sanitary problems of Fall River, discussing at considerable length the Quequechan River Project and the Contagious Hospital problem.—*Earl R. Hamilton*, '09, *Secretary, Fall River Gas Works Co., Fall River, Mass.*

GREAT REVIVAL IN PHILADELPHIA

The announcement of the plans of the Technology Club of Philadelphia for the coming season is illustrative of the advances that are being made in local alumni associations all along the line. There has always been a fine Tech spirit in Philadelphia, but as an organization the local club has had its ups and downs. Last fall a very earnest effort was made to put the club on a good footing, and an arrangement was made with the Engineers Club of Philadelphia which gave the members of the Tech club the privileges of the club house rooms once a month not only for meeting purposes but every facility of the club. A list of the names of the members is kept by the secretary of the club, and information as to the whereabouts of Tech men in Philadelphia and vicinity can be obtained from him. The Tech club arrangement is made under what is known as affiliated membership, only one other organization in the city having so far availed itself of this privilege.

The Philadelphia organization has had one meeting at the Engineers Club, which is located at 1317 Spruce street. After an informal dinner the members adjourn to the Rathskeller and billiard rooms and there spend an hour or so before the paper of the evening is given in the auditorium upstairs.

The officers of the association are: President, Eugene S. Foljambe, '01; vice-president, H. S. Walker, '05; secretary-treasurer, George C. Lees, '08; assistant secretary, C. J. Walton, '14; Alumni Council representative, Reginald A. Wentworth, '04.

The meetings are held on the first Wednesday of each month, and the officers have already arranged for papers and speakers for practically the entire year, with the exception of the April meeting. It is the intention of the committee to make the social features of the meetings attractive, and a regalia has been designed which is most impressive. Pipe racks are being provided to be put up in the club for the use of the Tech men exclusively, and each man is to be presented with a pipe on which his name will be engraved so that he can find it whenever he comes to the club house. Arrangement has been made to furnish a piano player for each of the meetings during the year.

Changes in the Teaching Staff

At the meeting of the Corporation of the Massachusetts Institute of Technology, October 14, the following appointments were confirmed: H. Langford Warren, lecturer on architectural history; George Owen, assistant professor of naval architecture; William Eustis Brown, instructor in public health administration; Charles G. Cook, instructor in modern languages; Royal M. Frye, instructor in physics; Otto E. Plath, instructor in modern languages; Russell W. Porter, instructor in design; Percy Marks, instructor in English; Horatio W. Brown, assistant in mechanical engineering; Evers Burtner, assistant in naval architecture; Charles H. Calder, Horatio W. Lamson and Joseph C. McKinnon, assistants in physics; Thomas H. Huff, assistant in aeronautical engineering; George W. Simons, Jr., Howard C. Thomas and Andrew N. Wardle, assistants in civil engineering; Elwyn E. Snyder, Jr., assistant in industrial chemistry; Rupen Eksergian and Leon H. Webber, research assistants in electrical engineering; William Green, special teacher on report writing and Carleton J. Spear, assistant in physical training.

In addition to these appointments confirmed, the Executive Committee announced the appointment of the following to the instructing staff, the confirmation of them coming at a later meeting of the Corporation: John Hyneman, Percival J. Munn and Ellis S. Tisdale, assistants in civil engineering; Allen R. Greenleaf, assistant in physics; Theodore D. Parsons and James A. Tobey, assistants in military science; Franklin L. Hunt, instructor in physics; Verne Cornelius Kennedy and Hilding N. Carlson, assistants in electrical engineering and A. S. Dana, previously appointed research assistant in electrical engineering is to be part time assistant in the course on alternating currents.

The Providence Board of Water Supply recently appointed a board of engineers to aid in the work of developing the city's new water supply, all of whom are Tech men. The deputy city engineer is W. W. Peabody, '93, division engineer is George T. Seabury, '02, and the designing engineer, W. G. Pickersgill, '05. The members of the board have all been associated on the board of water supply of New York City.

Class News Features

The REVIEW has inaugurated a new departure this year with a view to making the class news even more interesting to the general reader. The feature of the present issue will be found in the letters from Tech men in foreign lands. The representation is not as broad as it would have been if there had been more time to secure the contributions from our foreign correspondents. However, the spread covers almost the entire world, and it will pay our readers to glance over the class notes and read these foreign letters.

The special feature of the class news in the January REVIEW will be the work that Technology men are doing for the state, municipality and community. This refers more especially to voluntary service but may well include investigations or research work which Tech men are doing and which result directly in benefit to mankind. Please consider this as a request from your class secretary to send in an account of any work of this kind in which you may be interested.

Reminiscences of Institute life will be the class news feature of the April REVIEW. There is an immense amount of material to make this number especially attractive, and every reader of the REVIEW is especially requested to contribute to it. Send it to your class secretary early so that he will have it on hand.

A Record Number

It is safe to say that never before has there been so much class news in any of our alumni publications as there appears this month in the TECHNOLOGY REVIEW. There are altogether one hundred pages, which is some fifteen or twenty pages more than the largest contribution ever before received from the class secretaries. The TECHNOLOGY REVIEW has, for a number of years, exceeded any alumni publication in its spread of class news. Next to it comes the *Harvard Graduates' Magazine*, which last month contained forty-two pages.

A glance through the class news will indicate to our readers the tremendous amount of labor that the class secretaries are expending to strengthen alumni interest in Technology. The least that classmates can do is to make it a business to hold up the hands of the secretary and send him every bit of news there is.

Chinese Tech Students Win

At the Chinese Intercollegiate Track Meet, which occurred at Middletown, Conn., August 31, there were six colleges entered. The athletic events were held in connection with the eleventh annual conference of the Chinese Students' Alliance, and several hundred Chinese students were in attendance. The delegation from the Institute won the meet with a total of $42\frac{1}{2}$ points, the University of Chicago coming next with 30 points and Cornell third with 16. S. S. Kwang of the Institute and W. J. Chang of Chicago were the stars of the meet, each scoring 27 points. The hundred yard dash was covered in $10\frac{4}{5}$ seconds, and the shot put record was 34 feet, $11\frac{1}{2}$ inches. The Chinese Minister to the United States, Kai Fu Shah, and Admiral Wei Ha, witnessed the meet.

A Little T. C. A.

The enterprise of the Indianapolis Association has led the members to plan a small edition of the Technology Clubs Associated at Indianapolis on November 20. Indianapolis is quite centrally situated for a number of the associations and they have invited the Tech men in Dayton, Cincinnati, Louisville and nearby cities to attend this meeting.

In the afternoon the delegation will attend the Wabash-Depauw football game. The banquet will be held in the evening.

The New York Club Requests

The request for group photographs to be hung in the rooms of the New York Technology Club, which was printed in a former number of the REVIEW, has not brought much response. There are hundreds of group photographs of teams, committees, editorial boards, etc., that are packed away in trunks and out-of-way places that the New York Club would be mighty glad to have to place on its walls, If you have any pictures of this kind, please send them on to Ralph H. Howes, 17 Gramercy Park, New York.

TECH MEN IN THE PUBLIC EYE

DR. W. R. WHITNEY, '90, director of the research laboratory of the General Electric Company, Schenectady, New York, has been made a member of the Naval Advisory Board of Inventions, appointed by Josephus Daniels, Secretary of the Navy. The board consists of twenty-three members. Dr. Whitney was selected by the American Chemical Society, the other appointee of the society being Mr. L. H. Baekeland, the inventor of Velox photographic paper and bakelite insulating material.

PROF. GEORGE F. SWAIN, '77, has been made a member of a commission appointed by the Board of Estimate of New York City, to investigate the whole question of the developing of New York harbor, exclusive of the west side of Manhattan and those points in Brooklyn where satisfactory plans have already been worked out. The other members of the commission are W. C. Loree, a prominent railroad engineer, and John F. Stevens, at one time chief engineer of the Panama Canal. For the purpose of maintaining this commission, an annual budget of one hundred thousand to one hundred and twenty-five thousand dollars has been provided.

RAYMOND B. PRICE, '94, vice-president of the United States Rubber Company, has been made a member of a special committee of the American Society of Aeronautical Engineers to coöperate with the representatives of the society on the Naval Advisory Board of Inventions.

LAWRENCE ADDICKS, '99, consulting engineer of Phelps Dodge & Co., of New York City, has been appointed a member of the Naval Advisory Board of Inventions, appointed by Josephus Daniels, Secretary of the Navy. Mr. Addicks represents the American Electro-Chemical Society. The other representative of the society is Dr. Joseph William Richards, of South Bethlehem, Pa.

CHARLES SAVILLE, '06, has been made director of sanitation of the city of Dallas, Texas. He was appointed by the mayor of

Texas immediately after the recent Texas coast storm. Mr. Saville was formerly engaged on problems of sanitation and water supply in New York City.

GEORGE BURNAP, '06, official landscape architect of public buildings and grounds, Washington, D. C., was the subject of an extensive article in a recent New York *Telegraph*. Mr. Burnap took the civil service examination for landscape architect of Washington with seventy others. While at Technology he took the architectural course, and won a scholarship in the American Academy at Rome. After a year in Italy he was appointed to the chair of landscape design at Cornell University, which he resigned when he went to Washington.

JEROME C. HUNSAKER, '12, lieutenant, U. S. A., who has charge of instruction in aeronautics at the Institute of Technology, has recently been appointed to the Legislative Board of the American Society of Aeronautical Engineers, founded by Thomas Edison, to coöperate with the Naval Advisory Board of Inventions.

C. H. PEABODY, '77, in charge of the Department of Naval Architecture and Marine Engineering at the Massachusetts Institute of Technology, has recently received notice from Baron Chinda, Japanese ambassador to Washington, that the Emperor of Japan has conferred upon him the Imperial Order of the Rising Sun, third class. Accompanying the letter was the insignia of the order.

Get Ready for the Stunts

Perhaps the feature of the coming all-Technology reunion which will be looked forward to with the greatest interest, will be the day of the classes when each class pulls off its stunt. In order that these may be uniformly creditable, it is time now for the classes to begin to think of what they are to present, bearing in mind that not over five minutes can be given to each class and that the character of the performance must be such that it can be brought on and taken off the field quickly. When the selection has been finally made, it should be taken up with the chairman of the committee for that day in order to avoid duplication of ideas.

NEWLY ELECTED MEMBERS OF THE ALUMNI ASSOCIATION

The following former students have been elected members of the Alumni Association: John M. Keyes, '82; Frank R. Field, '89; Ralph S. Whiting, '96; Herbert H. Dakin, '99; J. Ellis Doucette, '07; Chester B. Lambirth, '08; Maurice L. McCarthy, '08; Wilfred A. Morris, '08; Douglas B. Turner, '08; R. W. Wilson, '08; Lloyd Champlin Eddy, '09; George Irving Emerson, '09; Thornwell Fay, Jr., '09; Robert Inslee Hulsizer, '09; Christian Kurtzmann, '09; Michael Terry, '09; Willis R. France, '10; Berthold C. Huber, '10; Macmillan Houston Johnson, Jr., '10; Wm. Joseph Keefe, '10; William Henry March, '10; James R. Stevenson, '10; Charles S. Ashley, Jr., '11; Donald C. Bakewell, '11; George B. Forristall, '11; Charles A. P. Maguire, '11; Charles W. Nitschke, '11; Walter I. Phillips, '11; Chauncey B. Smythe, '11; Henry R. Snyder, '11; Robert O. Wood, '11; Frank O. Baldwin, '12; Leroy W. Chandler, '12; Fred S. Dodson, '12; Paul G. Fraser, '12; Earle M. Giesey, '12; Edward H. Guilford, '12; William H. Jouett, '12; John M. Leddy, '12; James B. Little, '12; Harrison H. Morse, '12; Michael W. Murray, '12; Roger B. Stone, '12; Kenneth N. Wildes, '12; George R. Bartlett, '13; Emerson L. Bray, '13; George P. Capen, '13; George A. Curtin, '13; John F. Foley, '13; William Guild, '13; Alfred L. Higgins, '13; David H. Hilliard, '13; Benjamin F. Howland, '13; Samuel Knight, '13; Herbert S. McLellan, '13; Miss Effie L. Macdonald, '13; Nathan H. Poor, 2d, '13; Thomas Joseph Rice, '13; Louis C. Rosenberg, '13; David Stern, '13; William H. Torry, '13; Arnold S. Wahl, '13; George R. Wallace, Jr., '13; Merwin H. Ward, '13; John B. Welch, '13; Louis E. Wright, '13; Everett D. Yerby, Jr., '13; Porter Hartwell Adams, '14; Harold A. Deal, '14; Donald, R. Dixon, '14; Chauncey E. Doud, '14; Thomas J. Duffield, '14; Agnello Guimaraes, '14; Albert J. Hahn, '14; Walter G. Hauser, '14; Theodore H. Krueger, '14; Harold M. Langdon, '14; Albert R. Losh, '14; Malcolm C. Mackenzie, '14; Ernest W. Mann, '14; Joaquin R. Masferrer, '14; Stanley W. Merrill, '14; Donald W. Parsons, '14; John C. Potter, '14; Newell W. Rogers, '14; Ernest S. Shurtleff, '14; Marquis S. Smith, '14; Paul R. Smith, '14; Frank S. Somerby, '14; Starr W. Stanyan, '14; David L. Sutherland, '14; Augustus S. True, '14; D. E. Van Volkenburgh, '14; David M. Hughes, '15; James A. Tobey, '15.

GRAND JUBILEE REUNION

AT BOSTON

MONDAY, TUESDAY AND WEDNESDAY

JUNE 12, 13 AND 14, 1916

FAREWELL TO ROGERS

DEDICATION OF NEW BUILDINGS

CELEBRATING 50 YEARS OF SERVICE

ANNUAL ALUMNI BANQUET

WILL BE HELD IN BOSTON, SATURDAY, JANUARY 8. SEE ANNOUNCEMENT WITH BALLOT

COUNCIL MEETINGS

FOR THE REST OF THE YEAR, WILL BE HELD NOVEMBER 29 AND DECEMBER 27 AT THE ENGINEERS CLUB.

MISCELLANEOUS CLIPPINGS

Engineering Administration

With the graduation exercises the past month, the Massachusetts Institute of Technology completed its first year of the new course in engineering administration. It is naturally much too early to make a full statement as to its real value, for, as one of the professors said, it is not easy to judge of the success of any line of education until the young men who are instructed have had a chance to try it out in real life. But with this consideration set aside the course gives evidence of success. It is an option beginning in the second year, and only sophomores undertook the work the past year. In 1915–16 there will be second- and third-year students taking the course, while in 1916–17 students will have taken the full course.

The philosophy of the combination of technical engineering studies and those of business administration is self-evident. Till recently the heads of engineering corporations have been either men who began at the bench and learned the business in the office, or else men who were in the office and learned engineering in that inefficient school, the efficient shop. It is the Institute's plan to furnish parallel and correlated studies which shall teach business and engineering together. There is no intention of making skilled accountants in any sense of the word, but to furnish the fundamentals of accounting to men who wish to accept financial responsibility. The student will learn the terminology of bookkeeping, the meaning of assets, liabilities, good-will, franchises, of the profit and loss account, the theory of accounts in general and of depreciation. Cost accounting, bonds, sinking funds, amortization, etc., are included in the studies, as are the functions of the stock and other exchanges, the broker, and similar agencies in the marketing of securities and stocks. Transportation and industrial organization will be taken up in the same analytical way.

Not only is the course adapted to business in connection with engineering generally, but options are provided which correlate the special work to civil, mechanical, electrical and chemical engineering, each of which is taken up from the point of view of the specialty, different in some related details from the other options.

From the opening of the course its numerical success was assured. Fifty-two students enrolled in September, 1914, as against about an equal enrollment in electrical engineering and from eighty to ninety in the mechanical and civil engineering courses. It may be that some of the students imagined that the course was to be an easy one and the Technology degree was to be gained by a cut comparatively short. It is unnecessary to say that such hopes were without foundation.

From the students' point of view the new course has been satisfactory, and certain of the lectures really popular. The accounting, which has been open to those not registered for the full course, has attracted eighty-seven men, 70 per cent. more than the course proper, while the lectures on banking and finance have been taken by 125 students. It is further true that these numbers would have been larger, but for the difficulty in arranging for the courses in an already well-filled schedule.

One of the interesting features in connection with the establishment of the course was the thorough consideration and digestion of it in advance of adoption by trained and successful business men. It had its origin in the Alumni Association of the Institute. It is the habit of this body to take up important questions at the association's meetings and at the meetings of its Council, and subject them to the scrutiny of committees which report in regular engineering fashion. It is along the lines of the report of a committee of this kind that the course was established. It is the first of its kind in the country, but it seems to fill the bill so well that it is likely to be a pattern for similar work in other institutions.—*Engineering Record.*

A Star in the Orient

The sun never sets on the fame of Massachusetts Institute of Technology. The latest Tech organization has just been established at Shanghai and it is known as the Tech Club of China. The president of the new club is W. W. Stevens, '98, of the Standard Oil Company.—*Evening Record*, Boston.

Serving in Servia

On May 15 a party of sanitary engineers and physicians left New York for Servia to serve under Doctor Strong of the American Red Cross Society in the Sanitary Commission. They arrived in Athens on June 5 and by this time are in the field. The party was in charge of Mr. Edward Stuart, '10, a graduate of the Massachusetts Institute of Technology, who had had experience as a state sanitary engineer in Oklahoma and had been engaged in engineering work in Brazil. The assistant sanitary engineers were recruited from graduates of the Massachusetts Institute of Technology and the School of Engineering of Harvard University. The School for Health Officers furnished two physicians who had just been awarded the certificate in public health. Two of the men were assistant engineers in the Massachusetts State Department of Health. The party was, therefore, composed of young men who were unusually well qualified for their task.

Their work is to clean up Servia in order to prevent the spread of typhus fever and cholera, which dread diseases have already made terrible ravages among the inhabitants, many of whom have been driven from their homes and are living under most insanitary conditions. What problems will have to be met cannot be well forecast, but two of them are known.

Clean water must be provided, and war must be waged on the body louse, which is the agent by which typhus fever is transmitted. There are few large cities in Servia and the problem in general will be that of camp sanitation.

The undertaking will be a hazardous one for the young sanitarians. As preventive measures each one was vaccinated against typhoid fever before leaving this country, and the new vaccination treatment against typhus fever was taken by them during the voyage across the Atlantic.

In this way, thanks to the American Red Cross Society and the Rockefeller Foundation, American engineers are not only helping to save life in Servia but are acting as an outer line of defense for the people of the United States. The first principle of modern sanitary strategy is to destroy the germs of disease at their foci and not allow them to spread. The work of the Servian Sanitary Commission will make easier the work of the U. S. Quarantine Service. This is but the beginning of a very important movement aimed at such diseases as typhus fever, cholera, the plague, typhoid fever, and the like, which in past generations have followed the lines of trade and made an aftermath of death for every great war.—*Engineering Record.*

An Important Gathering

"The Rochester congress was probably the most important public health gathering that this country has seen in many years with the possible exception of the International congress on Hygiene," said Doctor Walton. "A mere enumeration of some of the sanitary experts present is sufficient to establish the importance of the meeting. Among the men there were Surgeon-General William C. Gorgas, probably the foremost sanitary expert in this country—the man who made the building of the Panama canal possible by making the canal zone sanitary; Dr. William T. Sedgwick, professor of biology and public health in the Massachusetts Institute of Technology and president of the American Public Health Association: Dr. Herman M. Biggs, state commissioner of health of New York State; Prof. C.-E. A. Winslow, director of the division of publicity and education of the New York State Department of Health who is soon to become professor of public health of Yale University; William C. Redfield, secretary of the department of commerce, and the health officers and directors of laboratories of nearly every state and important city of the country.—*Record,* New York.

Our New Course

With the opening of the coming school year the Massachusetts Institute of Technology carries forward another step its courses in engineering administration, courses unlike those at any other institution, which have the purpose of shortening the long route to the top which has been expressively termed, "to the admiral's berth through the hawsehole." It gives prospective managers of engi-

neering enterprises a general and authoritative view of the principles of finance and administration.

Last June the first year of the course was finished, having been an option for the second year students and now the work is to be continued with the third-year students. Dr. Davis R. Dewey is head of the department of economics and statistics at Tech, seconded by Professor C. W. Doten, and for the special work of the new course Martin J. Shugrue was added last year. The coming second year of the development of the course will call for an increased instructing staff, and Harry R. Tosdal begins his duties next week with especial reference to the needs of juniors in the studies of the course.

Mr. Tosdal is a native of Estherville, Ia., a graduate, '09, of St. Olaf in Northfield, Minn., and following his college studies he engaged for two years in business. He then went to Europe studying economics under Professors Bücher and Stieda of the University of Leipzig, with finishing touches at the University of Berlin. Returning to this country he took up work for the Ph. D. at Harvard, being also during 1913–14 and 1914–15 assistant at the university. His thesis study was an investigation of the German Trust Movement, a movement in Europe to be compared with the pools of this country.

The studies of the third year of this course include industrial organization, report writing, statistics, transportation, securities and investments, together with a liberal set of engineering studies. Approximately one-quarter of the study time is devoted to the special courses of engineering administration.—*Boston Transcript.*

Choosing a Career

This is the time of the year when freshmen in technical colleges are trying to decide what branch of engineering will be best for them to follow. They are handicapped by lack of knowledge as to the qualifications for and the opportunities in each of the several fields and they find it difficult to make an intelligent decision as to their future. Undergraduates, as a rule, place far too much importance on the making of such decisions so early in their careers. The matter can well be dismissed for a year or two and thought given to the fundamental requirement for success in engineering work. This was well expressed by President Maclaurin in a recent address to the incoming class at the Massachusetts Institute of Technology. "Do not worry too much about the choice of a subject," he said. "Success can be attained equally well in any line of work, for out of every course can be derived the two essentials of future advancement—the right method of attacking a problem and the right spirit in which to undertake work." The young technical student who takes this sound advice to heart need not be uneasy as to the wisdom of casting his lot with the civil, mechanical, electrical or mining engineers.—*Engineering Record.*

The Chance for the Motor Vehicle

An electric motor is not simply a substitute for a horse between the shafts of a truck. The motor-driven vehicle does more than replace the horse-driven vehicle. The installation of a motor-driven vehicle sets a faster pace for the complete delivery or haulage system and enables new and better standards of performance to be maintained for the general methods of handling and transporting products. Our delivery systems have been built up around the horse as a motive power. The horse has physical limitations of endurance. Observations show that the horse stands six and one-quarter hours out of every ten. As a consequence, loading and unloading operations and the flow of products in and out of merchandise-handling establishments have all been planned with the physical capacities of the horse as the prime consideration. The motor truck has no such physical limitations. It can work and must work almost continuously to be most economical. Specific information as well as interesting generalizations on this important relation between horse, electric and gasoline trucks are presented in the final report of the electrical engineering department of the Massachusetts Institute of Technology, published under an appropriation by the Edison Electric Illuminating Company of Boston. Motor trucks to be most successfully operated must be the nucleus of a delivery plan which may differ materially from the delivery system for which the horse is the motive power. An electric motor truck puts the delivery of products on an engineering and not on a rule-of-thumb basis. Manufacturers, therefore, in general must sell not only the electric vehicle itself but a plan for using it successfully. They must offer the user the modern substitute for an old-fashioned method of packing, receiving, storing, handling, shipping, and discharging merchandise which has been developed with the horse as the motive power. The wider distribution of any special product which knocks the props from under the traditional way of doing work generally depends on accompanying that product with a plan showing how the better way is brought about. The price of the product legitimately must include the cost of showing buyers how they can improve their methods.—*Electrical World.*

Disease Control

The recently held meeting of the American Public Health Association at Rochester was its forty-third. When the association was organized, in 1872, the most important health question before the people was the prevention of cholera, for cholera had but recently swept across America. As soon as the fear of cholera had subsided, the association gave its thought to yellow fever, a plague which laid waste southern cities every year and occasionally invaded New York, Philadelphia and Boston. Ship fever in that day was a source of great alarm to health authorities from time to time.

The control of these diseases and others of similar type constituted

the problem of the handful of health officers who were accustomed to come together in annual meetings in the early seventies.

Dr. Stephen Smith, who presided at several of these small meetings, was in attendance at Rochester. He had seen cholera, yellow fever, epidemic typhus, plague, and other diseases of great importance in the early days disappear entirely from the United States. As he read over the program he found that not a single disease which occupied the time in 1872 was down for discussion. They are now of no importance.

However, if Drs. Stephen Smith, Henry Holton, Montezambert and Bryce, the pioneers present at the Rochester meeting, missed the small group who planned against yellow fever in yesteryears, they had much to console them. They saw a meeting out of all semblance to the handful who were wont to come together. At Rochester there was an attendance of more than 2,500 men and women, each a worker in the prevention of disease.

It is significant of the tendency of the times that the number that attended his annual meeting on prevention of diseases was greater than the number that attended the last meeting of the American Medical Association.

These veterans, no doubt, noticed that a large proportion of those in attendance were not physicians. In addition to the large number of prominent physicians there were present: Professor Sedgwick, Mr. Fuller, Professor Whipple and others of a group of engineers; Mr. Glenn, Mr. Frankel, Mr. Rose and others of their group of sociologists; Dr. Dublin, Mr. Lappin, Dr. Crampton and others of the group of statisticians; Mr. Rittenhouse, Dr. Fiske and others of the group of insurance men, besides nurses, newspaper men and teachers.

These pioneers no doubt noticed that in addition to the control of epidemics of contagion there was discussion of such subjects as the increase of efficiency, the prolongation of life among middle-aged people, industrial hygiene, housing, wages, single tax, pollution of air and water, nursing, school inspection, the use of drugs, venereal disease and prohibition. Woman suffrage almost got into the arena of debate.

Our respected friends have seen changes in the personnel of the association, but these changes are no greater than the changes that they have seen come in the scope of public health.—*Boston Herald.*

Of Fundamental Importance

In his inaugural address before the American Public Health Association Professor Sedgwick emphasized certain neglected or too feebly active sanitary measures, the improvement and more energetic application of which would add enormously to the conservation of health and working capacity of the people. Coming from so eminent an authority, a prominent teacher of hygiene and sanitation, *The Sun* would emphasize this coun-

sel, especially since it has constantly pointed out one of the measures with perhaps too frequently reiterated insistence. Such insistence, however, seems to be justified by this remark of Professor Sedgwick:

"We have as yet and in spite of ample knowledge failed to make our American milk supplies what they should be. This is partly because we have been too timid to insist that good milk not only costs more to make, but is worth more for food, and must therefore be paid for, and partly because we have not yet taught the public as we should that the only safe milk is cooked milk, and for infants' milk that is pasteurized—preferably in the final container."

It is gratifying to discover that in this scientific body of sanitarians our insistent advocacy of pasteurized milk has been approved, indicating that the people still require to have this vital lesson impressed by reiteration, if the numerous infectious diseases which we have shown to be frequently transmitted by uncooked milk—typhoid fever, scarlet fever, diphtheria, malignant sore throat—are to become less prevalent and if infant mortality is to be diminished.

Considering its importance, Professor Sedgwick regards the lack in most medical schools of instruction on hygiene as a serious danger, and he proves this neglect by the absence of teaching on these branches in the best text-books on medicine:

"The best teaching of today is not found in the text-books of the schools, but in the leaflets issued and distributed by certain leading boards of health and life insurance companies."

These publications need, as we have demonstrated, to be supplemented by the newspaper press in simple, easily grasped language.—*New York Sun.*

Tech's Publicity

The leading exponent of publicity, at least so far as the East is concerned, is the Massachusetts Institute of Technology. Here is an institution that does many things for humanity; as an efficient technical school it is bound to come into close contact with the world of affairs. And it insists that the world shall know that its labors are not in vain. The Institute, through its accredited press agent, maintains intimate relations with all the leading newspapers of the country. When the completed plans of its new home in Cambridge were announced at least one paper in every important city received something like 10,000 words of carefully prepared copy and numerous drawings of the proposed buildings. The material was all sent out in advance, to be released simultaneously throughout the country. It was easily the biggest stunt in college publicity that was ever attempted and carried out. The institution, in return for the energy and money expended, received gratis thousands of dollars' worth of advertising, the press received some first-

class newspaper copy without the expense of going after it and the readers received authentic news of a matter of public interest. Incidentally, every one concerned was satisfied with the bargain.

The Technology system is easily the best that has been evolved to date. For its success it depends, of course, upon the news sense of the man in charge. The press agent must know what the newspapers want and when they want it. He must have free access to all the sources of information. It should also be stated that the Institute policy does not deprive student writers of any means of self-help. The press agent works in coöperation with the reporters, and handles only such affairs as require the more mature mind and experienced hand.—*Evening Public Ledger*, Philadelphia.

At the last commencement at M. I. T. one of the Chinese students sent an account of the exercises and the names of the Chinese graduates to six Chinese papers, where the article was subsequently published. At the expiration of the necessary time, one of the Chinese graduates received congratulations from a friend at home on being third in his class. The writer followed the usual custom in this country in placing the names in their alphabetical order. In China, the graduates have their names recorded according to their ranking in the class, and consequently the name which appeared third in the alphabetical order was interpreted in China as giving that student third rank in his class.—*Boston Advertiser*.

BOOK REVIEWS

AUTOMATIC SPRINKLER PROTECTION. By Gorham Dana, S.B.,'91. Boston: Thomas Groom & Co., Inc. 5½ x 8 inches. 407 pages cloth. Price $3.00.

This excellent treatise on the subject of automatic sprinkler protection is based upon a series of lectures delivered by the author before the Insurance Library Association of Boston in 1913. The book is of historic interest, in that it explains the developments of automatic sprinkler systems. It begins with the perforated pipes and early systems and types of sprinkler heads, and continues with the later developments and describes and explains the various patents which were obtained. There is a chapter on tests and characteristics of sprinklers which goes into minute detail as to the material employed in the manufacture of heads and also the physical properties of the various devices.

The rules for installation of systems are given with plans for the distribution and layout of sprinkler equipments. Following this, alarm valves and dry valves are taken up and their method of construction and system of operation are described in the text and shown quite effectively by the illustrations which are both in half-tone and line diagrams.

The subject of sprinkler supervisory systems, maintenance of the sprinkler and the fire record and sprinkler leakage are treated in separate chapters. The subject of automatic sprinklers as a protection to life is discussed in a short chapter and the author points out the interesting fact that according to the Factory Mutual Insurance Companies covering risks employing 1,500,000 people there were only twelve deaths in sprinklered buildings in a period of thirty-eight years.

He points out the need of the legislature to extend the use of sprinklers in many places where they are not now used.

For any one who wishes to post himself thoroughly on the subject, the book furnishes the most complete information obtainable.—*Architecture and Building.*

TEXT-BOOK OF ADVANCED MACHINE WORK. By Robert H. Smith. 520 pages, 5 by 8 inches. 609 illustrations. Published by the Industrial Education Book Co., Boston, Mass. Price, $3.

This text-book has been prepared by the author, who has charge of the machine shops of the Massachusetts Institute of Technology, as a text-book in machine work for students in technical, manual training and trade schools, and for apprentices in machine shops. In his preface, the author calls attention to the fact that text-books have been prepared for the study of languages and all the sciences, whereas teachers and students of machine shop work, apprentices and machine operators, have been handicapped by the lack of text-books comparable with those that aid the student and teacher in other subjects, and for this reason he has prepared two text-books—one on "Principles of Machine Work" and one on "Advanced Machine Work"—the book under review being the latter of the two. In his book on advanced machine work, the author treats of engine lathe work, cutting tools, measuring, turning, fitting, threading, chucking, reaming, mandrels or arbors, curve turning and forming, inside calipers and inside micrometers, boring

and inside threading, brass finishing, broaching, drilling jigs, boring, boring-bars and boring machines, eccentric turning, knurling, cylindrical, internal, surface and cutter grinding, planing, milling, spur, bevel, worm and spiral gear cutting, toolmaking, spiral milling, the plug and button methods of locating holes of precision in jigs and fixtures, and sine bars.

The book differs from the ordinary descriptive work on machine tool operation in that it is arranged strictly as a text-book, giving specific "problems" of work to be turned out by the student. The whole subject has been analyzed and arranged so as to afford a gradual step-by-step training in machine work, much the same as the student would be taught mathematics or mechanics by a simple orderly method. Machines, mechanisms and tools are illustrated mainly by perspective drawings so that the student who is not familiar with mechanical drawing may be able to get a comprehensive idea of the object represented. The drawings are, in many cases, so clearly marked with explanatory words and letters that many of them show the operations and processes involved more clearly than would an explanation in words. In addition, the book contains a great number of valuable tables and compilations of data that make it suitable for a reference book. In order to make reference to any particular part convenient, a very complete index is attached. The book is divided into twelve sections, each of which has the page number of the section preceded by the section number, this being a new idea in the arrangement of a book of this character. The instructor who is organizing a course will find a text-book of this character very valuable, because no lectures could possibly be as complete as is this book, and the data and illustrations will prove very useful to the student for study between the lectures. The whole arrangement of the book is founded on the author's thirty years' experience and study of the subject. The increased efficiency obtained at the Massachusetts Institute of Technology, by the use of these text-books, justifies high praise for them.—*Machinery.*

MANUAL OF THE SHERMAN LAW. A Digest of the Law Under the Federal Anti-Trust Acts. By Everett N. Curtis, '98. New York: Baker, Voorhis & Company.

It would seem that an act passed by Congress twenty-five years ago should be clear before the law and the world, but complications and confusion in the Sherman Act of July 2, 1892, seem destined to go on forever. Mr. Curtis, who is a member of the Boston bar, has produced a volume which will tend to clarify many previously puzzling points and also to show what has been done by courts in many cases under perhaps the most famous law in the history of the United States.

The precise language of the decisions has been followed by Mr. Curtis, except where prolixity or constant repetition of the legal principle makes condensation desirable. He also emphasizes the importance of the Federal Trade Commission in its bearing on the Sherman law, and he carefully notes points in this connection. Full text of both laws are given in the appendix, and a broadly comprehensive index showing the way to any point in controversy covers many pages of this valuable volume.—*Boston Transcript.*

HYDROGENATION OF OILS. By Carleton Ellis, '00. D. Van Nostrand Company, New York, 1915. Price, $4 net.

Until the appearance of Carleton Ellis's "The Hydrogenation of Oils," the literature on hydrogenation had been scattered through many periodicals, and the

author has performed a valuable service in collecting, arranging, and editing the considerable mass of material. The first two chapters give in chronological order the methods which have been proposed for hydrogenation. Catalyzers and the part they play in the process are then discussed, and, after a chapter on the analytical constants of hydrogenated oils, their general characters and uses are described. There follows a very full description of the practical methods for producing hydrogen for the hardening of oil—from water gas, hydrocarbons, by steam or acids on metals, by electrolysis, etc. Full reference to the original articles and to the many patents is made, and the work closes with an Appendix on the litigation over patents of hydrogenated oil. The author is well known, and among the many patents which he has taken out,seventeen relating to the hydrogenation of oils are cited in this volume. He has included in his text virtually all that has been advanced on the subject, but has avoided critical comment as inadvisable at this stage of a young and rapidly growing process. As he remarks: "A few years hence, when oil hydrogenation will have found its measure and the more important points have reached definite settlement," much of the material here presented "may be considered superfluous." The publishers have produced a well-made and handsomely printed book, which, like their "Industrial Chemistry," is made unnecessarily heavy by their choice of paper.—*The Nation.*

THE THIRD BOOK OF '89. Published by the class. 389 pages. Illustrated.

The Third Book of '89, which was published during the summer, is the most ambitious effort that any Technology class has ever put forth. It is a complete record of the history of the class from its formation up to the twenty-fifth anniversary, and includes, besides the general history, biographies of the members of the class. The history of the undergraduate class, which is given by years, is remarkably full of detail, giving the important incidents and events of a quarter of a century ago with vividness. The period from graduation to the twenty-fifth anniversary is treated interestingly, recording the various class and lesser reunions that have occurred during this period. The crowning feature of the book, however, is the description of the twenty-fifth anniversary celebration at the Hartford Yacht Club, Saybrook, Conn., last year. The entire moving picture of this event has been delightfully done into letterpress with its proper high lights, shadings and atmosphere and plenty of sunshine streaming over it all. In reading this part of the book the participants in this celebration have had a duplicate pleasure. The illustrations, going back to the freshman days of the class at the Institute and continuing up to the last year, cover nearly every phase of the activity of the class, including group pictures taken on various occasions, as well as two pictures of most of the members of the class, one taken during college days and the other in recent years.

The Third Book of '89 has a quality not usually found in publications of this kind. It is handsomely printed and bound and should be in the hands of not only every '89 man, but of every close friend of that progressive class.

NEWS FROM THE CLASSES

1868.

ROBERT H. RICHARDS, *Sec.*, 32 Eliot Street, Jamaica Plain, Mass.

An incident in the life of Bryant P. Tilden, who died some years ago, may interest the class. He was divisional engineer on the Great Northern Road during its construction. At Prickly Pear Cañon in Montana, difficulties arose. He reported to his chief that the cañon was narrow and that the road location was too near the stream level. Also there was a large area above it, in which, if a cloud-burst should come five miles of railroad would be washed away. In spite of his protest the original plan was followed. Some years after, the writer was going over this road, and was informed that the year before the prophecy had been fulfilled. Five miles of railroad had been destroyed, necessitating the raising of the bed to a higher level.

The secretary had the pleasant experience of attending Mrs. Richard's twenty-fifth anniversary at Smith College, this spring. It proved a wonderful and beautiful occasion. He also was at the fiftieth anniversary of Phillips Exeter Academy, where W. E. Hoyt, M. I. T., '68, was one of the nine present out of fifteen still living. It was extremely interesting, as the members of '65 had a good chance to see the great strides that had been taken by the old Academy while maintaining its high standard of work.—The secretary has been working in Virginia on a heavy-liquid process for the separation of ores from their gangue, the gangue being light enough to float while the ores are heavy enough to sink, which makes a rapid and effective separation. The process is still in its formative stage. The work progressed so successfully during the summer that he was able to leave for the West in September, where he attended the International Engineering Congress. —The *Manual Training and Vocational Education*, of May, 1915, prints two addresses under the title of "Value of Manual Training," by Robert H. Richards and Henry Turner Bailey. These addresses were given at the annual dinner of the Boston Manual Training Club. Professor Richards has been long interested in manual training and has been president of the Eliot School at Jamaica Plain for many years.

It is with deepest regret that the death of two more members of '68 is recorded.

MILES STANDISH

Miles Standish, the eighth descendant in the direct line from Myles Standish, the Pilgrim soldier, died at his home, 44 East Seventy-fourth street, New York, in his 67th year.

Mr. Standish traced his descent through Alexander Standish, the oldest son of Myles Standish, who married Sarah Alden, the daughter of John Alden, his father's friend.

Mr. Standish was born in New Bedford, Mass., and was educated at the Friends Academy in that city, later being graduated from Massachusetts Institute of Technology. Mr. Standish had been a resident of New York for many years, and until recently lived in Fifth avenue, near Washington square. He maintained an office at 20 Nassau street, but had been retired for years, having at one time been active as a lawyer.

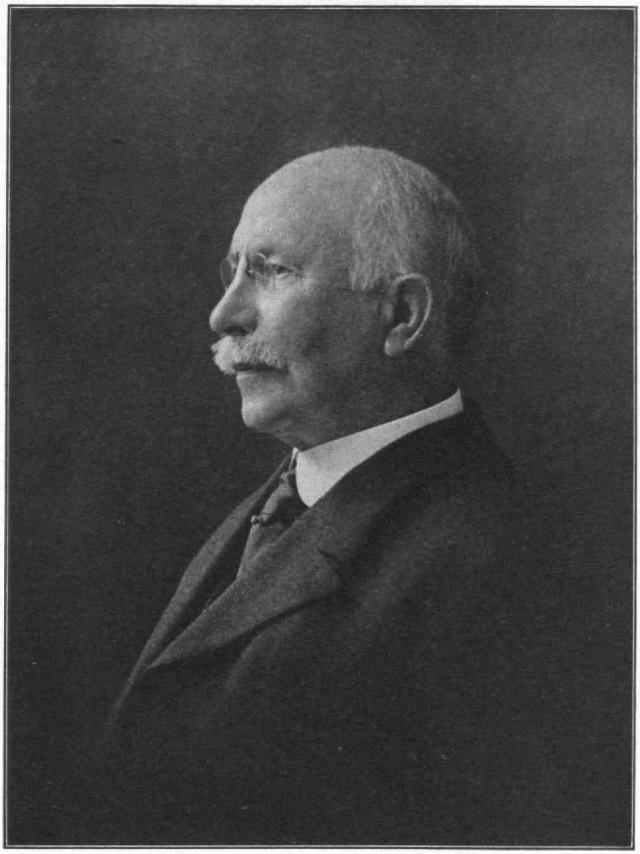
Mr. Standish was a member of the Century, Metropolitan, Lawyers, City and Garden City Golf clubs. He was also a member of the Society of Colonial Wars and the New England and American Geographical societies. His widow survives him. She was Miss Katharine Lanier, the youngest daughter of the late James F. D. Lanier.

James Pike Tolman

Mr. James Pike Tolman, a graduate of the Massachusetts Institute of Technology, class of '68, died after three months' illness on July 28, 1915.

Mr. Tolman was a life member of the Corporation of the Massachusetts Institute of Technology. He served for many years as a member of the auditing committee of the Corporation and also as one of the visiting committee of the Mechanical Engineering Department, having held the office of chairman of this committee since the year 1907–08. He took an active interest in the welfare of Technology and was especially interested in the development of the Mechanical Engineering Department. He knew personally every member of the instructing staff of this department and took a personal interest in each. Throughout the year and a half, during which the preliminary studies of the department plans for the new Technology were being made, he kept in close touch with the work and spent many hours in consultation with members of the department. No matter how crowded his days were with details of his own business, he was always willing to give time to such work for Technology.

Mr. Tolman had been for many years, and was at the time of his death, president of the Samson Cordage Works. After leaving the Institute in '68 he went to work for the Silver Lake Company as assistant to the treasurer, then as superintendent, which position he gave up in 1882. In 1883 he patented a switch braiding machine. In 1884 he established the Samson Cordage Works of which he became president in 1888. He had taken out thirteen patents on machinery and devices pertaining to his business, the last having been issued April 13, 1915.



JAMES P. TOLMAN, '68

Mr. Tolman, besides being a member of the Corporation of Technology, was a member of the American Society of Mechanical Engineers, a trustee of the Franklin Savings Bank, a member of the West Newton Book Club, of the Unitarian Club of Boston, the Massachusetts Reform Club, the Technology Club, the Neighborhood Club, and the Brae Burn Country Club.

He was a gentleman of the old school, loved and respected by all who were fortunate enough to know him. Too much cannot be said of the high esteem in which he was held by his associates. Technology has, by his death, lost one of her most loyal alumni.

E. F. M.

1876.

JOHN R. FREEMAN, *Sec.*, Grosvenor Building, Providence, R. I.

Two more members of the class of '76, affectionately remembered, have gone to their reward—Lorenzo M. Davis and Warren H. Fairbank, but information of their passing on happens to have been slow in reaching the class secretary.

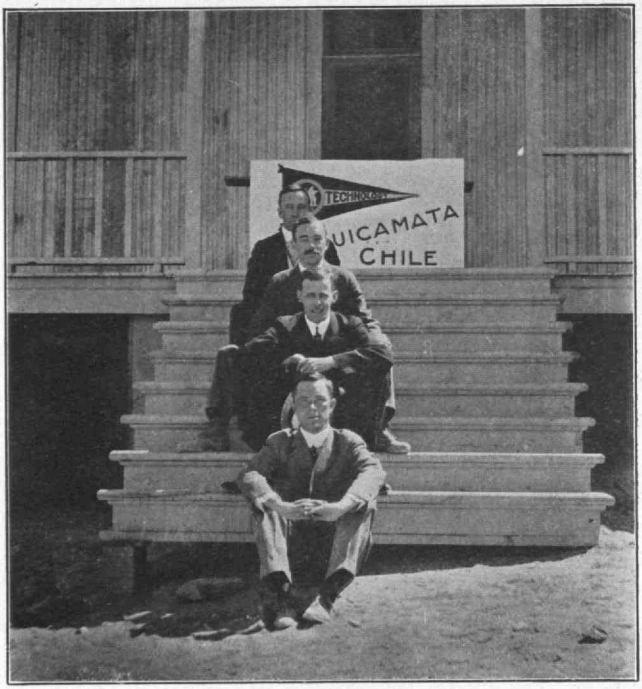
L. M. Davis for twenty-one years had made his home in the thriving city of Minot, North Dakota, and had long been one of its leading citizens. His enterprise provided the town with its first coal mine, with its first public electric lighting plant and with its telephone service and he had continued general manager of these enterprises until about five years ago. Also for several years he was president of the Commercial Club of Minot and had served the city as one of the first members of its park board. After selling his interest in the electric lighting and telephone systems, he devoted his energy to organizing the Northern Briquette Company for converting lignite coal into briquettes, and had put this on a commercial basis. Buildings had been erected, machinery installed and the manufacture begun on an important scale. Mr. Davis was president of the company at the time of his death. His life for the past twenty-two years has been an interesting example of the way in which men, trained and experienced in the strict professional lines of engineering, work into broader opportunities in business lines.

After leaving Technology, he had practiced railroad engineering in various parts of the Rocky Mountain region and had come to be regarded as an exceptionally skillful locating engineer. Some thirty years ago he was one of those who helped discover the route for the Canadian Pacific and helped push its construction across the continental divide, and year after year found him out somewhere in the wilderness, exploring for locations. He had many interesting tales to tell of his experiences beyond the frontier and it is a matter of regret that he did not commit some of these to writing. They would have helped make the history of an epoch in railroad engineering that has now passed.

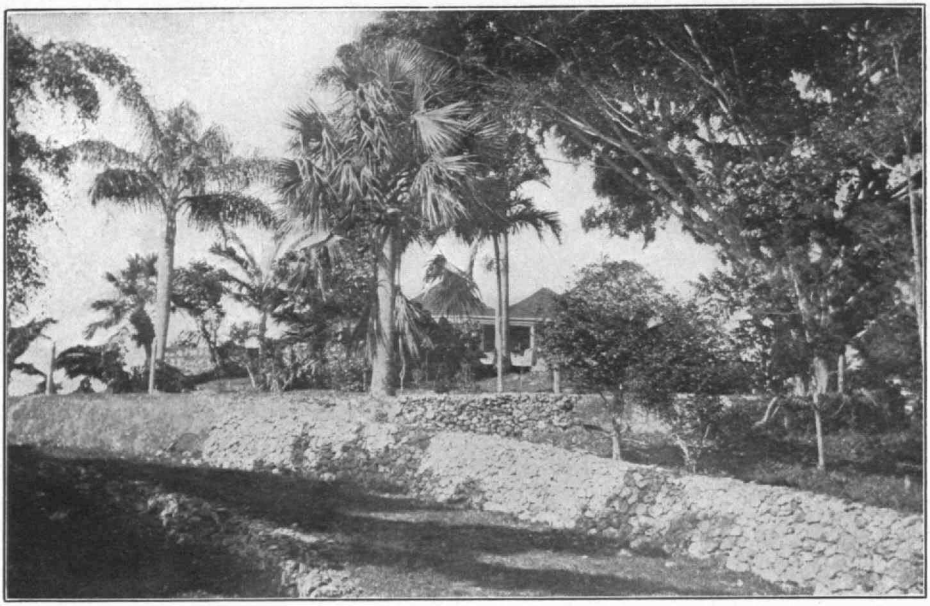
Following the completion of the transcontinental line, he became locating engineer of the Soo Line, controlled by the Canadian Pacific, from Portal to Valley City, and, with the completion of this line, came the turning point in his career. Upon receiving an extremely flattering offer to go to China for a term of years upon railroad exploration, he took time to think things over and, as he told the writer, concluded that already he had spent enough of his life beyond the pleasures of civilization and a permanent abode, and having been impressed with the possibilities of the new town of Minot at the junction of two transcontinental routes, in a fertile land, while locating the railroad through that region, he returned to Minot, settled down and became an important factor in its progress. For more than twenty years he was recognized as one of its most useful citizens, always ready to take hold of any project in the interest of the city and always ready to contribute his share to the public good.

Six years ago he married Miss Louise Wallace, who, with a little daughter, survives him. He is also survived by a brother, Charles Davis of Robbstown, Texas, and a sister, Susan H. Tourtellot of 65 Walden street, New Bedford, Mass. His death came unexpectedly at a hospital in Chicago, where he had gone to find out what was ailing him, without suspecting the seriousness of his trouble. An internal cancer was discovered, demanding immediate operation, which he did not survive. Mr. Davis was born in New Bedford about fifty-nine years ago, prepared for Technology in its public schools, entering in '72. He was a most delightful companion, overflowing with merriment and physical energy and affectionately known to all his classmates by the sobriquet of "Slippery Elm."

Warren Fairbank, soon after leaving Technology in '75, settled down to the comfortable life of a New England farmer in the town of Harvard, some thirty miles west from Boston and his record is mainly that of a well-to-do farmer, active in the affairs of his town. For twenty-five years he was selectman for the town of Harvard. He was also trustee of the Public Library, trustee of the Bromfield Academy, a member of the school board for thirty years, and also a member of the board of assessors and one of the overseers of the poor. He was moderator at the town meetings for thirty-two consecutive years, and a director in the North Middlesex Savings Bank of Ayer. He was quite prominent in Masonic affairs, being past master of the Blue Lodge and a member of the chapter. He was a member of the Harvard Lodge I. O. O. F. He was a citizen and neighbor respected by all, and one whose friendly, comforting advice was always in demand by those of his neighbors who found themselves in trouble or sorrow. He died on March 22, 1915.



Half of the Technology Club of Chile. Beginning at the top the names are: Millard W. Merrill, '13, XIV; Frank T. Smith, '13, XIV; M. R. Thompson, '11, XIV; William H. Martin, '07, I.



Harvard Astronomical Station, Mandeville, Jamaica.

1879.

CHARLES S. GOODING, *Sec.*, 28 School Street, Boston, Mass.

In accordance with suggestion in a letter received from the editor, Mr. Litchfield, on September 11, 1915, your secretary wrote to different members of the class notifying them that the November number of the TECHNOLOGY REVIEW would be especially devoted to news of classmates at a considerable distance from Boston, especially to those in foreign countries, that the January number would be devoted to services given by members of the class, without compensation, for the state, municipality and the community, and the April number to reminiscences of Institute life. Quite a number of very interesting letters have been received from different classmates.

The members of the class of '79 seem to be mostly located in the United States. They are urged to send their secretary letters to be used for the January and April numbers of the TECHNOLOGY REVIEW along the foregoing lines.

Our president, Richard H. Morgan, is traveling in Europe and he has a son in the British army.

The following letter was received from Professor W. H. Pickering of the Astronomical Department of Harvard College:

For the past three years I have been located near the town of Mandeville, in the heart of the Island of Jamaica. The Harvard Astronomical station is located on a plateau at an altitude of 2,000 feet, and the climate is delightful. The extremes of temperature recorded by our self-registering instruments are 54° and 89°. These, of course, are rare, 60° and 85° being practical limits. While the rainfall is occasionally heavy—we recently had 8 inches inside of twenty-four hours, yet we have fewer hours of rainfall than in the north, and far more sunshine.

My department of astronomy relates to the solar system, and my especial interests relate to the moon and Mars. For studies of these bodies the very best atmospheric conditions obtainable are essential and I believe we have the best "seeing" here, and more hours of good seeing than any other astronomical station in the world, both summer and winter.

With regard to my daily life, the town of Mandeville is small, but there are a number of pleasant people here, and during the tourist season I see many interesting people from the states. What one chiefly misses are one's friends, one's scientific acquaintance, and the various scientific meetings. While not exactly commuters, we are still not too far out of the world to come north occasionally.

Besides the astronomical instruments, visitors here find the tropical vegetation and productions of interest. We raise for our own use oranges, grape fruit, tangerines, bananas, coffee, allspice, guavas, and other tropical fruits. Palms and many greenhouse flowers grow in our garden, and many more in the fields and woods about here. Excepting for the addition of the tropical fruits and vegetables, the food here is the same as at home, and of course also the domestic animals, horses, cattle, dogs, cats, and poultry. We draw the line at sheep and pigs. The servants are all black, and ordinary ink would make a white spot on one of them. You never see such ebony in the north. Life here is practically the same as at home, a little more monotonous but less annoying. While I rather dread a return to the hot summers and cold winters of the temperate zone, especially the former, yet I am looking forward to being present at the dedication of the new building, and the seeing of my old friends again, no matter at what season it may take place.

Pretty good letter from William, but with his usual excess of modesty he has said more about the place than himself and what he has done. He is in charge of the Mandeville station of Harvard College Observatory, where he considers the atmospheric conditions particularly favorable for his astronomical work. With the Draper telescope, of eleven inches aperture, he has studied the surface of Mars, of which he is publishing monthly reports, the satellites of Jupiter, and close double stars. Later on I hope to get a letter from him giving some particulars as to what he has accomplished in his chosen profession.

Here is a letter from Dick Lodge, headed Redlands, Calif. Dick is surely enjoying life and has caught the habit of Californians to boost everything which is theirs.

Your secretary had the pleasure of traveling through California on a six weeks' trip in the latter part of March and April and found that every separate community was a great colony of boosters for their own town, county and state, especially for their town. When going to Los Angeles he was told that before he had talked with a man five minutes in Los Angeles he would be boosting Los Angeles and that is the way it turned out.

I have been here now for some five years and three years ago bought some sage brush land, cleared it, erected a house and set the land out in orange and other trees.

I am at an elevation of some 1,950 feet and command a view that is rather fine and quite extensive. The San Bernardino range of mountains lies to the north and northeast and there is usually some snow on the higher parts most of the year. Gray Back and Mt. San Bernardino are the two highest peaks, the former over 11,000′ and the latter over 10,000′ elevation.

A storm here yesterday, which gave us rain in Redlands, covered these peaks white.

In the winter season it rather surprises the tourist to see this range white and the valley below full of orange trees, loaded with their yellow fruit.

All Californians are boosters, so I seem called upon to add that we have the most beautiful city in the state. Said city is situated in the largest county in the state and in the United States, and the said county grows the finest oranges in the world.

I can easily prove this to any classmate, who does not believe it, if he will give me an opportunity to welcome him and show him the country.

I am glad that the last meeting was such a success and I regret that I was unable to be present.

I regret also to know that our numbers are diminishing. I was indeed sorry to learn of the death of Walter Allen, as I had no idea that he was sick.

With kindest regards to you and other members of '79 and all good wishes to you as secretary.

It is a long time since we have heard from our old friend Vibe Spicer but before long we are going to get together, I hope. I can see him now as he used to prance up and down before the company at Parade Rest making those beautiful rolls on the snare drum while I stood an envious spectator "high private in the rear rank." The following is one of his characteristic epistles:

The story of my Canadian adventure is requested—this is V. "C." Spicer talking—and I am put to it to find anything of engineering interest to record.

Being ordered by the president (of the concern with which I have been identified since leaving Tech) to proceed to Montreal, open an office and "carry on" with the object of establishing the business in Canada, I took my wife in one hand and my life in the other and arrived there in September, 1907, a stranger in a strange land. My instructions were not too definite; merely to get acquainted with the proper people and to look about and advise as to forming a Canadian branch works, building shops, etc. In Canada, as the world over, Westinghouse is a name which opens peoples' hearts and interests. While I had no letters of introduction, my native modesty (?) led me into offices of the right sort. Incidentally it led me into the homes of these same people and that was not the least interesting part of my six years' odyssey. The social and psychological (if that isn't the word, let it go, it sounds effective) side of Canadian life as seen by a Yankee in Montreal is mighty interesting, but not to be dwelt on here.

After three months of endeavor toward the desired end and reports favorable to my chief, the panic of '07 put the "Kibosh" on any immediate action in the matter and I was directed to chuck it and return home. This was a disappointment, of course, as very much enthusiasm had been shown among many people—those having money, position and influence in business and the government—for our proposed enterprise. These assured me of their desire to invest to any desired amount, provided the works should be established in or near Montreal under my management.

However, as matters looked unsettled for the moment, I returned home to my allegiance leaving the office in charge of a lieutenant.

With the clearing up of hard times, I was again ordered to Montreal to take over the command and proceed to get business for the home company and to forget all about the proposition of a Canadian establishment.

For a year or more, my job was a lazy one. Traveling about as the notion took me, fishing, hunting, sailing with the "right sort" always in touch, and "business getting" imperfectly concealed.

A certain few of these gentlemen, having an exalted opinion of the profits of our special business and an innocent confidence in my particular fitness to manage the undertaking, formed a company, with the most unlimited sort of charter and offered the management to me. I put the matter before Mr. Westinghouse who, with his usual wit and discernment, advised me to take it. "You will have much fun, learn a lot and if you stump your toe, you can come back to us." Also "Incidentally you can manage to do some business with us for mutual good." The salary offered was too good to refuse and the proposition entirely to my taste. I accepted. The three succeeding years were interesting and strenuous—locating shops, designing and building these; the buying of machinery, tools, etc.; getting the right men; getting up drawings of standard apparatus; making jigs, templeats, special tools; contracting for light, heat, power, etc. All the big and little things that comprise a first class, twentieth century plant for the manufacture of signalling and interlocking kept me busy.

We located at old Lachine, eight miles up the St. Lawrence River, buying some twelve acres of land and building what we intended to be one of many units—to follow in "rapid concussion" as the business increased. This shop, a modern reinforced concrete, saw-tooth roof, etc., structure, combined foundry, pattern shop, blacksmith and forge shop, machine shop, tool shop and room, stores and, upstairs, offices, drafting rooms and an experiment and developing shop.

We were a mighty happy lot, with money to spend and credit unlimited. Orders for our product came to swamp our capacity and before we were in shape to tackle them, we had booked these to amounts greater than our capital costs; bit off more than we could chew. Indigestion followed. Internal troubles, on the board and off, introduced animosities. Individuals with academic tendencies got perniciously busy producing a sort of business appendicitis. A recall from my old company came at the moment when everything tasted bitter so I cut myself loose from the Canadians and remained in Montreal as Canadian Manager of the Union Company for a year. During this time I had the satisfaction of placing the men who had been loyal to me in the "Kanuck" adventure, in good positions in the signalling

departments of various railways there, incidentally managing to turn certain valuable patronage back to my old concern, where it remains today.

The shops which we built are now producing arms and ammunition for England, while I am back in G. C. and "in our little low log cabin down the lane," a wiser if not a better man.

1880.

GEORGE HUNT BARTON, *Sec.*, 89 Trowbridge Street, Cambridge, Mass.

New York City's architecture has won national honor, according to a telegram which was received in September, at the F. W. Woolworth executive offices. The message says the Woolworth Building, Cass Gilbert, architect, has been awarded a gold medal at the Panama-Pacific Exposition as an example of present day architecture. This is the highest honor of its kind that can be conferred by the authorities at the Exposition. The message says Cass Gilbert, architect of the Woolworth Building, also received a gold medal.

1881.

FRANK E. CAME, *Sec.*, Metcalfe Apartments, Westmount, Quebec, P. Q.

FRANK H. BRIGGS, *Asst. Sec.*, 146 Summer Street, Boston, Mass.

Frank Darlington and Frank Briggs, who were sole members of Course IX of our class, were prominent at the Barnstable Agricultural Fair.—Two members of '81, Ira Abbott and Howard Barnes, are on the board of governors of the Technology Club of New York. The board of governors consists of ten members. Ira Abbott is also treasurer of the club and Barnes chairman of the Finance Committee.—Ed Warren writes as follows:

I am not State Ornithologist of Colorado. One mighty good reason is that "there ain't no such thing," and another is that if there were, I would most likely not have enough pull to get it, and the job would be held by some cheap politician who did not know a robin from a rattlesnake.

Spent about all last winter at home, working at various things in my line, and looking after Colorado Audubon Society work. Last June I spent at Crested Butte, my old hangout, you know, doing some ornithological work, and completing work of that sort begun years ago. Have written a paper on the birds of that region which I presume will be published soon. Then spent the rest of the summer at home, watching the antics of the tourists, of whom there were crowds.

1884.

HARRY W. TYLER, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

The following is part of an interesting letter from K. Y. Kwong:

I am glad to let my classmates know that I am still alive and trying to build more railroads. The European War, however, is being very much felt in China as well as in other neutral countries, consequently further railroad building in this country is being suspended for the present. It is very gratifying to see the New Tech

buildings going up so fast and it will be my aim to visit it when it is completed. The future Tech men should have nothing more to desire when the school is moved to the new buildings and I hope more of my countrymen will take advantage of the new M. I. T. as it is the best technical institute in the United States.

It is interesting to note that the winner of the American Power Boat Association Challenge Cup for the one-mile championship of North America last August was the *Tech, Jr.*, owned by T. Coleman du Pont. The following account is taken from the New York *Tribune*, of August 19:

Traveling at a speed of 47.36 knots, or 54.54 statute miles an hour, faster than many express trains are driven, T. Coleman du Pont's 26-foot hydroplane, *Tech, Jr.*, dashed across the finish line off the Port Washington Yacht Club yesterday, the winner of the American Power Boat Association Challenge Cup for the one-mile championship of North America.

Motor boat enthusiasts from the East and West who had come to see records broken in the race for the Gold Challenge Cup, and were disappointed, were amply repaid for their trouble yesterday, for they witnessed what all agreed was the fairest and best managed race over a measured mile course that they had ever seen.

It was at first thought that the *Tech, Jr.*, had broken all previous records, but the figures show that she just equalled the mile record made at the Peoria races last year by the *Baby Speed Demon II*, owned by Mrs. J. S. Blackton. That boat, which started in yesterday's race, was beaten by the *Tech*, 4.18 in average speed.

The winning boat, which was designed and built by Adolph Apel at Ventnor, N. J., was entered by the Atlantic City Yacht Club. She is equipped with a 250-horsepower Sterling engine, which made 1,550 revolutions a minute, it is said, in this race. She is credited with having done a mile on the Delaware River at the rate of fifty-nine miles an hour.

1885.

I. W. Litchfield, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

At the recent session of the American Foundrymen's Association, the following resolutions on the death of Edgar H. Mumford, were passed:

Resolved: That in the death of Edgar H. Mumford, the American Foundrymen's Association, as well as the foundry world, has lost a man of rare attainments.

He was cultured, kind of heart, ever ready to help the cause of industrial education; an inventor of marked ability; endowed with unbounded enthusiasm in his chosen field; an ornament in the group of workers who are striving to conserve human energy while advancing civilization.

He was one of nature's gentlemen, whose worth was appreciated by all who knew him; an example of righteousness in daily life, and a shining star in the gallery of distinguished men affiliated with the foundry industry.

—R. R. Goodrich was granted the degree of doctor of philosophy at Columbia University in June. Dr. Goodrich conducted an investigation and presented a dissertation on the hydro-electric treatment of copper ores. He has received an appointment as professor of metallurgy at the University of Idaho, Moscow, Idaho. —The Maitland *Daily Mercury*, Maitland, Australia, June 3, contains a long article on the celebration of the completion of the Newcastle Steel Works by the owners, the Broken Hill Proprie-

tary Company. This plant was built by Dave Baker, who went there about three years ago for this purpose. In his address giving the history of the plant, Mr. D. E. McBryde, M. L. C., said that one of the directors, Mr. Delprat, had gone abroad in 1911 to investigate the steel industry in England, Germany, Sweden and the United States and to secure the best iron and steel man for the purpose of making a report on the enterprise. They found this man in Mr. David Baker, and after making a report, on the basis of which it was decided to build the plant, Mr. Baker was commissioned to return to the United States to arrange for the export of the necessary material and machinery. It had cost to build the plant, $7,500,000. He gave great credit to Dave for the expedition of the work and noted that the plant had started without a hitch, which spoke a great deal for his engineering foresight. Baker, who has been made works manager, said that he appreciated all the credit that had been given him for his share in the work of placing the enterprise into successful operation. The plant was erected by Australian labor, and ninety-eight per cent. of the men employed in the works today were Australians. He had employed Canadians for similar work in Canada, and all nationalities for such work in the United States, and he found the Australian laborer, under proper leadership, just as efficient as any of them. He believed that a great force for the progress of Australia had been created in this great and efficient steel mill. Organization and this combination of modern equipment and skilled management spelled success and prosperity for the industry, and would, he believed, be a powerful factor in increasing the prosperity of the Commonwealth. There were present at the banquet the governor-general, the governors of states, a federal minister, state ministers, members of the federal and state parliaments and mayors of municipalities in addition to the officers of the company from various places in Australia and Tasmania.—Homer, who is president of the Rhode Island chapter of the American Institute of Architects, spoke on municipal architecture in Providence in his annual address, October 1.—George Nye, who is city engineer of New Bedford, has a small farm on the shore out in the direction of Horse Neck beach. Every year George's farm is the scene of a grand and glorious clambake under the auspices of the Technology Club of New Bedford. This year the event was pulled off October 16. The New Bedford crowd is nothing if not original. This year the note of the clambake was "preparedness." There was a competitive drill for a prize, a tent-raising competition, and two teams of trench diggers strove to be the first to throw up a trench so as to be invisible to the umpire. Then there was team rifle practice, for which the prizes were nickel-plated pop guns. These annual clambakes at George's summer place are very delightful and are attended by nearly every Tech man in New Bedford.

1887.

E. G. THOMAS, *Sec.*, Wilson Tire & Rubber Co., Springfield, Ill.

Brett sends a new address for his firm, Brett & Hall, landscape architects, who have removed to the Garden Building, 248 Boylston street, Boston.

The secretary on September 1 took up the work of the mechanical engineer of the Wilson Tire & Rubber Company of Springfield, Ill. This company, in addition to the manufacture of the usual types of automobile tires, inner tubes and other auto accessories, is developing a new type of non-puncturable tire which has decided advantages over previous designs and which will shortly be upon the market.

1888.

WILLIAM G. SNOW, *Sec.*, 24 Milk Street, Boston, Mass.

Thomas R. Kimball of Omaha was elected first vice president of the American Institute of Architects for 1915.—George C. Dempsey assisted in entertaining the governors at their recent convention in Boston.

A future number of the TECHNOLOGY REVIEW will contain reminiscences of Institute life to which members of '88 are requested to contribute through their secretary.

It is with the deepest regret that the secretary has to report the death of William H. Gerrish which occurred in Malden, Mass., July 15, as the result of burns received in a garage fire.

Gerrish always took a keen interest in class affairs and was present at all reunions whenever possible. While at the Institute he was identified with Course II and followed mechanical engineering as a profession. Mr. Gerrish was widely known and respected among steam engineers and firemen in eastern Massachusetts, and was singularly successful in the administration of his office, to which he brought a practical appreciation of the problems of combustion as met by the power-plant operator. He was born in Lowell, Mass., forty-nine years ago, and after graduating from the Institute of Technology in 1888 was mechanical superintendent of the Massachusetts Cotton Mills at Lowell. During the Spanish-American War he was connected with the Ordnance Department at Washington, D. C., and later became superintendent of jute mills at Paterson, N. J., and New York City. He was appointed smoke inspector at Boston in 1910, and the practical application of the Massachusetts smoke law had been almost entirely in his hands from its inception. He was occasionally called to other cities to lecture upon the subject of smoke prevention, and his death deprives both the state and the steam-engineering profession of a specialist of high standing. He is survived by a widow and a daughter.

Word has also been received of the death October 3, of Arthur S. Mann, which occurred at Saranac, where he had gone for his health. Mr. Mann's death follows a long fight against tuberculosis, signs of which were evident some fourteen years ago. That he lived until now was in no small part due to the devotion and intelligent care bestowed upon him by his wife, Dr. Eleanor D. Mann, who made heroic efforts to conquer the disease. For more than six years Mr. Mann was obliged to take periodic rests from his work at the General Electric Company, and last May was compelled to give up active work entirely. In June, with Mrs. Mann, he took up his residence in a cottage at Saranac Lake. His wife and a brother and sister of Medway, Mass., were with him at the end.

Allen S. Mann was born in Medway, near Boston, Mass., forty-five years ago. He was graduated from the Massachusetts Institute of Technology and became one of the country's greatest authorities on steam generation. He had written books on the subject and had given lectures before engineering societies, as well as lecturing in Columbia University. He was a frequent and valued contributor to technical publications, and since his residence here often made trips to other cities to talk before gatherings interested in his line of work. He was for many years associated with the Allis-Chalmers Company of Milwaukee, in the interest of which he had been sent to Europe and Australia where he remained for several years overseeing the installation of the company's products. Returning, he entered the employ of the Metropolitan Street Railway Company in New York, where he rendered valuable service.

About 1902 he went to Schenectady, entering the General Electric Works, where his work had gained recognition. He had perfected many things having to do with steam, and for the last two years had been at work upon a coal which he was seeking to adapt to the use of factories similar to the G. E. Only those who were associated with Mr. Mann knew the real extent and value of his labor.

He was a man of rare personality and charm. Widely traveled, he was able to converse upon many subjects and visits with him were times of delight to those so privileged. A musician of attainments, he gave pleasure by his organ recitals and he was also a skilled trombone player. During his residence in Boston, he was a member of the Temple Quartet, having a splendid bass voice.

Mr. Mann married Eleanor Dorcas Pond, nineteen years ago last July. She, with the brother and sister mentioned above, is the only survivor.

1889.

WALTER H. KILHAM, *Sec.*, 9 Park Street, Boston, Mass.

The death of Eugene Edgett Peirce which occurred on September 9 comes as a shock to those of us who were accustomed to seeing

him frequently in Boston. At the time of his death Peirce was engaged in the work of perambulating the Massachusetts-Connecticut state line with a Connecticut engineer, a work which he performed at regular intervals in connection with his duties for the Massachusetts Harbor and Land Commission. He suffered a paralytic shock on September 4 and died in Springfield, Mass., on September 9. Masonic rites were used at the funeral services which were held in the Unitarian Church in Belmont, Mass., on September 11. Peirce had been for over twenty years in the Harbor and Land Commissioner's office and was one of the ablest and most popular men in their employ. He was always present at the reunions of '89 and much of their success was due to the interest which he took in providing music. Peirce lost his wife in August, 1911. He resided at 68 Leonard street, Belmont, Mass.

The secretary has also received notice of the death of Jasper W. Braley, Jr., but he has so far been unable to obtain any information regarding him. This occurred sometime in July, 1915.

Charles E. Beals is now pastor of the Church of the Unity, Worcester, Mass. He has accepted the office of chaplain of '89, this being probably the only Tech class having the distinction of having their own chaplain among their members. Beals' new residence is 27 Sever street, Worcester, Mass.—Pike's report as chief of the Electrical Bureau of Philadelphia shows a continuation of the reduction of expenses and increased efficiency of that bureau under his administration. The report shows the operation expenses cut down as compared with 1913 approximately $67,000, while additional services amounting to $11,000 have been rendered making an actual gain in efficiency of about $57,000.

The present summer has witnessed the appearance of '89's Third Book, which has been received everywhere with the warmest appreciation and the committee in charge think that they have reason to be proud of their work. Incredible as it may seem, there still remain a few members of '89 who have not subscribed for copies. It is strongly hoped that all these will not lose this opportunity to secure a copy of this remarkable volume. The committee is in need of further funds to complete payment to the printer and hopes to receive these orders as soon as possible. Application may be made direct to the secretary.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

W. B. Poland sailed from New York, August 7, to serve on the Belgian Relief, and may be away for a year or more.—Mr. Edmund D. Garfield is now in Washington, D. C., at 339 Pennsylvania avenue, as superintendent of the Brown Bag Filling Machine Company.—The duPont Powder Company on September 4 filed

an application for a charter for re-organization with a capital of $240,000,000.00, under the name of E. I. duPont de Nemours & Company. The purposes assigned in the incorporation papers were to deal in and with powder, dynamite, and other explosives of a high nature; and also to manufacture munitions of war and erect factories, mills, etc., for the purpose of manufacturing powder. Pierre S. duPont of our class is one of the incorporators. —In July, Guy C. Emerson, in conference with the attorney-general of Massachusetts, relative to the Commonwealth Dock graft charges, made a report indicating a waste of more than two million dollars.—At the twenty-fifth anniversary gathering of the class of '90, Harvard, honorary membership was conferred upon Professor William Z. Ripley of the department of economics at Harvard, who is of the class of '90, M. I. T.—H. P. Spaulding and family spent the summer at Cotuit, and in September they were in Camden, Maine.—Mr. and Mrs. G. L. Gilmore were at Kennebago Lake, Maine, during September, where your secretary forgot his cares of official life and indulged in the sport of fly-fishing.—During the twenty-fifth anniversary reunion of the class of '90, Harvard, the class of '90, M. I. T., sent their congratulations and best wishes, and with hopes possibly that the two classes might be together at their fiftieth anniversary. A most cordial reply was received from Mr. Thomas W. Slocum of the Harvard class, showing the cordial relations existing between the two universities. —Charles Hayden of Hayden, Stone & Co. says: "Our firm is taking a participation in the Anglo-French loan, first, because we believe it is to the business interest of this country that the loan be made, and, second, because we believe the security offered a safe and profitable one for investors."—The *Schenectady Gazette* of September 15 has the following interesting account of the appointment of W. R. Whitney to the naval advisory board of inventors, appointed by Secretary Daniels.

Dr. W. R. Whitney of Schenectady is the ranking member of the naval advisory board of inventors appointed by Secretary Daniels, which will hold its first meeting here October 6. Since 1900, Dr. Whitney has been director of the research laboratory of the General Electric Company at Schenectady. He was chosen by the American Chemical Society on the board of which Thomas A. Edison, the electrical wizard, is chairman.

In appointing Dr. Whitney, Secretary Daniels said:

"Dr. Whitney was born in Jamestown, N. Y., August 22, 1868, and was the son of John J. and Agnes (Reynolds) Whitney.

"He graduated from the Massachusetts Institute of Technology, with the degree of S. B., in 1890, and in 1896 received the degree of Ph. D., from Leipzig.

"He held the following positions at the Institute of Technology, following his graduation: Assistant instructor sanitary chemistry, 1890–92; instructor sanitary chemistry, 1892–94; instructor theoretical chemistry and proximate analysis, 1898–01; assistant professor theoretical chemistry, 1901–04; non-resident associate professor theoretical chemistry, 1904–08; non-resident professor chemical research, 1908.

"Since 1900, Dr. Whitney has been director of the research laboratory of the General Electric Company at Schenectady.

"Among his early works, Dr. Whitney, in conjunction with Prof. A. A. Noyes, successfully developed a recovery process for alcohol and ether from collodion, which insured the commercial practicability of the present photographic film.

"His most notable achievement has been the creation and development of the research laboratory of the General Electric Company at Schenectady. This laboratory, one of the earliest of its kind in this country, the embodiment of the application of science to industry, has gained a world-wide reputation by the quality of its work and the importance of its results. Those results speak for themselves, but only those associated in the laboratory with Dr. Whitney can realize to what extent they are due to him personally, or how truly the story of the laboratory, from its inception with a small staff, to its present development with 150 people on its payroll, has been the story of his personal achievement."

Among the papers which Dr. Whitney has personally published are: Solubility Determinations, Colloids, Corrosion of Iron, Alloys, Chemistry of Light, Carbon Brushes, Vacua, Phenomena of Catalysis, etc. His translation of Le Blanc's textbook of Electrochemistry is well known.

Dr. Whitney is a member of the American Chemical Society (president in 1909), American Electrochemical Society (president in 1912), Society for Testing Materials, American Institute of Mining Engineers, American Institute Electrical Engineers, Soc. Chem. de Paris, American Association for the Advancement of Science, American Academy of Arts and Sciences, American Physical Society, British Institute of Metals.

In order to make the REVIEW of even more interest to the alumni, it has been suggested that any of the members of the class who are doing anything for their state, municipality, or community, and more especially with reference to voluntary service, or if any of them are in any way in public life or doing investigating or research work which would result directly for the benefit of mankind, if they would write up an account of same, and send it to their secretary, it would make very interesting reading for the rest of the alumni. It has also been suggested that the issue of the REVIEW for next April be made up largely of reminiscences of Institute life. We, therefore, hope that many of our class will take the time to send in to their secretary more or less accounts of incidents or events that occurred during their four years at Tech. It is hoped that this will not be limited to one reply alone, but many of the class will respond.

The next issue of the *Tea Kettle* will probably be out about Christmas time, in which will be the announcement for the plans of the reunion to take place next June. We are still waiting for the many letters that we hoped to receive from the members of the class, as up to date all that have come in could be counted on the fingers of one hand. In order to make the *Tea Kettle* not too much of a sameness, it is up to you members of the class to aid your editors by working the pen a little mite yourselves. Now get busy and let us hear from you.

Pierre S. du Pont, president of the E. I. du Pont de Nemours & Co. of Wilmington, Del., and Miss Alice Belin of Scranton, Penn., were married October 6, at the apartments of the bride's brother, F. Lammot Belin, 400 Park avenue. There were two hundred guests. The bride is the daughter of Henry Belin, Jr., of Scranton.

—Edwin F. Dwelley has challenged the Boston Consolidated Company's records, and seems ready to prove his assertions. A Boston paper discusses the matter as follows:

The declaration that if the records of the Boston Consolidated Gas Company on file with the Gas and Electric Light Commissioners are taken from the books of the company, then the books of the company do not set forth a full and true statement of the company's affairs, was made by Edwin F. Dwelley of Lynn at the hearing before the Gas and Electric Light Commission, yesterday afternoon, on the advisability of continuing and extending the so-called "London sliding scale" system, as operated by the Boston Consolidated Gas Company.

President James L. Richards of the gas company promptly challenged Mr. Dwelley's assertions and Commissioner Thomas P. Riley told Mr. Dwelley he had no right to make such a statement before the commission unless he was prepared to meet it with facts. Mr. Dwelley replied that he could produce the facts, but not before the afternoon's hearing was adjourned.

Mr. Dwelley was then requested by President Richards to withdraw his statement until such time as he was prepared to substantiate it. This Mr. Dwelley agreed to do, provided the commission would give him opportunity later.

In addressing the commission, Mr. Dwelley asserted that at present the Boston Consolidated Gas Company faces a depreciation deficit of $2,467,000, through under depreciation, based on the unit of six cents per 1000 cubic feet of gas distributed since the sliding scale went into effect.

He also said the consumers of the Boston Consolidated Gas Company's output have received no greater benefits than the consumers of other gas companies to which the sliding scale system does not apply.

Continuing he said that at the time the sliding scale act went into effect gas conditions in Boston were different than in England and remain so today. The systems in England and this country, he said, are different, inasmuch as the Boston Consolidated Gas Company cannot fix the price of gas beyond 90 cents per 1000 cubic feet. Further, the company regards its mains as assets of $10,000,000. He was prepared to show, he said, that he could replace these same mains with other adequate mains for less than $5,000,000.

One of the worst results of the sliding scale act, Mr. Dwelley said, was the taking of the Boston Consolidated Gas Company out of public control, or as some called it, "legislative interference." Such, he said, was the purpose of those who favored the sliding scale act and the reason why they wanted it continued.

The commission's next hearing in connection with the sliding scale act will be held at 10.30 Friday morning, October 15.

The following is an account dated Friday, May 7, 1915, of the experiences of W. McM. Adams, son of Arthur H. Adams of our class who was lost on the *Lusitania*, that will probably be of interest to those who knew Arthur so well:

The journey from New York up to the time of the disaster was exceptionally good. On Friday morning from seven o'clock to ten-thirty we had thick fog, but after that the sea was absolutely clear.

My father was in his cabin on D deck; I was in the lounge on A deck. We had just finished lunch, when suddenly the ship shook from stem to stern, and immediately started to list to starboard. The land side was the port side,—or left side. I rushed out into the companionway and looked out to sea on the starboard side in search of the submarine which had torpedoed us. While standing there, a second, and much greater explosion occurred. At first I thought the mast had fallen down. This was followed by the falling on the deck of the water spout that had been made by the impact of the torpedo with the ship.

While I was standing there, my father came up and took me by the arm. He had put on his overcoat and cap. Arm-in-arm, we went to the port side (the side that was highest from the water), and started to help in the launching of the lifeboats.

Owing to the list of the ship, the lifeboats, which had already been swung out the day before, had a tendency to swing inwards across the deck, and before they could be launched it was necessary to push them over the side of the ship. While working there, the staff Captain told us that the boat was not going to sink, and ordered the lifeboats not to be lowered. He also asked the gentlemen to help in clearing the passengers from the boat deck (A deck). I afterwards found that he gave this order because it was impossible to lower the lifeboats safely at the speed at which the *Lusitania* was still going. As her engines had been disabled, it was impossible to stop the way on the boat.

I saw only two boats launched from this side. The first boat to be launched, for the most part full of women, fell sixty or seventy feet into the water, all the occupants being drowned. This was owing to the fact that the crew could not work the davits and falls properly, so let them slip out of their hands and sent the lifeboats to destruction.

In the meantime my father and I were helping with many others, to launch one of the lifeboats,—my father all the time was comforting and sustaining all those who were overcome by fright. Finally, after ten minutes' unsuccessful work, seeing that a great many had got their lifebelts, I said to my father "We shall have to swim for it. We had better go below and get our lifebelts." He agreed, and we started down under great difficulties, owing to the list of the ship. On the way he was continually cheering me by saying:

"Keep calm, Son, remember that good is the only *real power*, no matter what happens now, only good will prevail in the end."

When we got down to D deck, our cabin deck, we found it was impossible to leave the stairs, as the water was pouring in at all the port holes. We started up again. On the way up I picked up a lifebelt that had been dropped by someone. Then we went into a great many cabins on B deck trying to get a lifebelt for my father, but with no success. Finally, we reached the boat deck again, this time on the starboard side, and after filling a lifeboat with women and children, we jumped into it. The lifeboat was successfully lowered until we were about twelve feet from the water, when the man at the bow davit lost his nerve, and let the rope go. Most of the occupants were thrown into the water, but we, being in the stern, managed to stay in. The lifeboat was full of water, but the sailors said it would float if only we could get it away from the *Lusitania*, which was now not far from sinking. My father threw off his overcoat, and worked like a slave trying to help loose the falls from the boat. This, however, was impossible. B deck was then level with the water, and I suggested to my father we should climb up and get into another lifeboat. He, however, looked up, saw that the *Lusitania* was very near its end, and was likely to come over on us, and pin us underneath. He shouted to me to jump, which I did. We were both swimming together in the water, a few yards from the ship, when something separated us. That was the last I saw of him.

As I was swimming away from the *Lusitania*, every conceivable thing was falling around my head from all the decks, so much so that I swam with my left hand shielding the back of my head. I feel sure that father must have been hit on the head at this time, and either killed or stunned, as he was a much stronger swimmer than I.

I found myself close to a collapsible boat, empty, and in perfect condition, and I immediately thought that if I could only get in it and row away from the *Lusitania* I might save a great many lives, as I knew that very few lifeboats had been successfully launched. I got half into the boat, and in some manner got stuck there, when looking up I saw that the rear mast of the *Lusitania* was coming straight for me. It grazed the left side of my face, and went right through the boat like paper, leaving me in the water. I then felt myself being drawn towards the *Lusitania* (luckily I was not sufficiently stunned to have lost my senses), so when I felt myself going under, I took a deep breath. While under the water I remembered that some of the survivors of the *Titanic* had gone down with the ship and yet been saved. This cheered me, and I fought hard for life, and finally came up again with my lungs bursting. I found a spar, and hung on to get rested. Then I realized a new danger was threatening me. All the wreckage was being thrown about in a very dangerous

manner, and likely to kill anyone it came in contact with. I believe a great many were killed in this mass of wreckage.

When the sea had calmed down, and the mound of water, which marked the spot where the *Lusitania* had been, was gone, I swam from one piece of wreckage to another. After about an hour I was helped on to a collapsible boat which was upside down. It was at this time that we saw smoke coming towards us on the horizon out to sea, but as soon as the funnel was just in sight, it went away again from us. This must have been one of the boats that the German submarine stopped from coming to our rescue.

Later, some people in another collapsible boat, full of water, but right side up and with oars, came and picked us off our upturned boat. When I got into this boat I felt that it would have been safer to have stayed on the former one. However, we managed to bale it out very considerably, and then we rowed around and picked up some thirty or forty people—most of them in a very bad condition. When our boat was sinking from the number of people in it, we decided to row to a fishing boat that was just coming into sight. Up to this time, I should mention, although we could see the houses plainly on the shore, for two hours there was not a single vessel of any kind to be seen, and this fishing boat was the first we saw. We rowed several miles in this sinking condition to the fishing boat, which was a very dangerous thing to do, as in case we had sunk there would have been no wreckage to save us. The spirit of those who were still conscious was wonderful. They sang "Tipperary."

When we arrived at the fishing boat we put aboard her all our women and children and the men who were in the worst condition, and the rest of us stayed in tow of the fishing boat, as we could do nothing more.

By this time the sea seemed to be filled with rescue ships, and very shortly afterwards we cut our moorings from the fishing boat, and were picked up by one of the patrol boats. This was at six o'clock. I entered the water at twenty-five minutes past two. The first torpedo struck the ship at five minutes past two. I arrived at Queenstown at half-past ten o'clock.

1891.

H. C. Forbes, *Sec.*, 88 Broad Street, Boston, Mass.
Fred A. Wilson, *Asst. Sec.*, Nahant, Mass.

'Ninety-one is to have a twenty-fifth reunion next year. Already Garrison is prodding our necks for information about ourselves—and threatens to ask our wives for it if we don't give up speedily. Woa! Later Bowen will come along with his hand out for cash. He thinks he is taking a chance not to do it at once—but his immortal namesake Steve Brodie also took a chance. But first of all give up to Garrison. We are now forty-five to fifty years old—except our girl members—and we all want to know about each other. As men get older they go back more and more to early associations—and although a man naturally hesitates, especially a New Englander, to write out even a two-paragraph biography, we all need to remember that information about ourselves is wanted for the pleasure of all of us. So come across, boys. Besides, Garrison will get it. Seems to us we once heard of a Garrison who put his foot down hard in the last century—so look out, it's in the blood.

The reunion next year is going to be a corker—plan for it all ye who are so far away we seldom see you—put down a space

next spring as sacred to old friends, to old associations, and to Technology. Remember you can do a year's work in eleven months when you can't do it in twelve. Already we are making up head bands, mouth frames, throat rollers, etc., to restore these various important anatomical features to normal after it is all over.

Your vacation around Boston will be a pleasant occasion for you. The bean crop has been ample—you need not know more just now. But there is more. '91 will be glorious, just glorious!

Good letters from '91 men far away—in the war zone, or in places distant from Boston—are badly wanted. Bostonians are secluded and need to know why men want to live elsewhere. So let this simple plea for enlightenment touch your hearts, you distant men. Ike—why wasn't he of '91—seems to think we don't spread ourselves as we deserve, and doubtless, for '91 men, his surmise is correct.

The Class Book

Some weeks ago a circular letter with a blank enclosed was sent to each member of the class. This blank should be filled in at once and sent to Charles Garrison, 463 Commercial Street, Boston, Mass. Only a few have been received to date and it is very necessary that all respond so as to make this book a complete class history. Will each member of the class who reads this notice, act at once?

1893.

FREDERIC H. FAY, *Sec.*, 308 Boylston Street, Boston, Mass.
GEORGE B. GLIDDEN, *Asst. Sec.*, 551 Tremont Street, Boston, Mass.

A letter from Frank S. Badger, who is at home again after six years of travel, has been received. His explorations in South America, examining and reporting on various hydro-electric projects, are most interesting:

In October, 1909, I went to London and joined the staff of J. G. White & Company, Ltd., as hydraulic and hydro-electric engineer. Was sent out to Cordoba in Central Argentina where I located a hydro-electric plant and prepared preliminary plans so that construction could begin. Then returned to London and worked out detailed plans for a 5,000 KVA installation after which I went back to Cordoba and supervised the erection. From time to time made examinations and reports on various hydro-electric projects and explorations for others.

One report was for the La Mejicana Mine in La Rioja, Argentina. The mine is located at an elevation of 16,000 feet and is connected with the railway in the valley by a Bleichert aerial cableway of over 20 kms. length. The annual rainfall in the valley is only 5 to 6 inches, but in the mountains it is heavier and the very steep slopes of the streams make hydraulic power possible. But the development would have been expensive and steam power, utilizing the heat in the flue gases at the smelter, was used.

Two hydro-electric projects in the Province of Cordoba were discovered and studied. These were of about 10,000 KVA each and one would utilize a head of some 2,600 feet.

Examination was made, with preliminary report, of a project of the Uruguayan Government for a dam on the Rio Negro to create an artificial lake of some 80 square miles area, the stored water being used to regulate the flow of the river for navigation purposes and its fall from the lake to generate electric power for transmission to Montevideo and other cities. This project was physically feasible but not sufficiently profitable to interest the necessary private capital. Montevideo is the most delightful of South American cities.

After the completion and testing of the Cordoba plant, I went to Central Chili and examined all the rivers within reasonable transmission distance of Santiago. Plenty of rather cheap power was found, but the market would not warrant a development in competition with the existing German plant. As the Chilean Transandine Railway was blocked with snow and ice, part of the return trip to Argentina was made on mule back.

A very extended examination was made of the port of Buenos Aires and the Argentine shore of the River Plate in that neighborhood, in order to select the best site for a large steam-electric power house for street railway, lighting and power purposes in Buenos Aires. This is a remarkable but not very pleasing city and one of the world's largest ports, its port works being noted for their excellence and excessive cost.

Later was sent to Pernambuco, Brazil, for exploration and selection of a hydroelectric project for the Tramways, Light & Power Company of that city. Examined all the rivers within reasonable transmission distance and recommended a high head project with extensive seasonal storage. Pernambuco is a very old but little known city of 200,000 inhabitants, situated 8° from the equator and lying only a few feet above high tide on a river delta. It is antiquated and squalid but picturesque and not unhealthy for northerners, unless yellow fever breaks out. Lived at the Casa de Banhos or bath house on a coral reef in front of the harbor where the breeze is almost always strong enough to keep away the mosquitoes which are a pest on the main land. The report for this project was finished in London.

South America offers excellent opportunities for a limited number of experienced and capable American engineers and scientists. In Argentina the meteorological service and many of the agricultural experiment stations are in charge of Americans. But an American ought, if possible, to go down there for position already secured and a definite salary. Otherwise and especially if he does not speak the language fluently, he must have sufficient means to live on for at least a year before he can hope to establish himself.

At the end of July, 1914, was sent out to Burma to examine and report on a hydroelectric project for the Burma Mines in the North Shan States near the Chinese frontier. These mines are managed by T. J. Hoover, Esq., of Belgian Relief Committee fame. Passing through France on the outward journey something was seen of the mobilization of troops for the war. On the steamer startling war marconigrams were received, but many of them were incorrect. Arrived in Rangoon, secured that necessary appendage of every respectable white man in the country, a "boy" or native servant who spoke some English but addressed me as Sahib. The mine is most interesting and is defended by many miles of ancient fortifications. It was worked for centuries by the Chinese who penetrated to such depths that they could no longer pump out the water by hand and then abandoned it. It is located in the mountains where the climate and scenery are delightful. The power was to be transmitted from a point in the foothills where the River Nam runs over a series of beautiful falls at a geologic fault, furnishing an opportunity for cheap development of power. Here I lived in a travelers' rest house built with rough wooden frame and floor, walls of double bamboo matting and roof of leaky thatch which I supplemented with my rain coat over my bed during the frequent rains. The mosquitoes were numerous and busy and in spite of using a netting and dosing with quinine I came down with malaria after a few weeks and was obliged to go out to a doctor for hypodermic injections before I could complete my work. Malaria is very severe in Burma and on the homeward voyage my attack returned four times. The passenger list was small as far as Colombo where the British Government filled the ship to overflowing with English volunteers from Ceylon, who accompanied us as far as Suez. This part of the voyage was made at very slow pace as part of a

convoyed fleet of 35 transports. At Gibraltar an English destroyer fired across our bows in the dusk but no other excitement occurred until I had to get ashore at London without a passport. After a stay in a fever hospital my report and other work was finished and I was given a vacation which merged into an indefinite furlough for the duration of the war as all Englishmen have more urgent business on hand than engaging in engineering construction in foreign lands.

This summer I have been examining the power possibilities of some New England streams to test the truth of the old adage that "there are as good fish in the sea as ever were caught."

S. Edgar Whitaker, consulting electrical engineer, who has recently returned to America after more than a year's sojourn in Germany, and is now located at 63 Elm street, Saxonville, Massachusetts, sends the following graphic picture of conditions in Berlin just prior to, and during, the war:

To have lived in Berlin for the four months before the war, and to have been in Berlin at the beginning of the war and for the first ten months of the war, is an unusual experience for an American, and one that I count myself very fortunate in having.

Berlin is a city of unusual beauty, with scores of attractive public parks. In the residential sections, no two of the apartment houses are just alike; a projecting tower, an artistic cornice, a change in the slope of the roof—all add to the pleasing effect. Usually these houses are four or five stories high. A friend showed me the only skyscraper in Berlin—an eight-story building.

The café life is unusual. We seem to have nothing just like it in America. Often there is music, and one may sit at a small table for the entire afternoon or evening, sipping a cup of coffee or a glass of beer, or reading the current magazines, while listening to the music. In America, however, the waiter would expect you to eat and drink and leave the table as quickly as possible to make room for others. These cafés are a substitute, for the ladies, of visiting and entertaining at home.

In April and early May, Werder, with its profusion of peach and apple blossoms, a half hour's ride from Berlin, is the objective point of many people. On a high ridge, running the length of the town, are several cafés, each of which can seat 2,000 people.

On Saturdays and Sundays, everybody goes to the Grunewald; a noted café there, at Hundekehle, has accommodations for 3,000 people.

My attention was called to the large round pillars, perhaps four feet in diameter, and twelve feet high, that are on many street corners throughout the city, and on which appear advertisements of the theatres and the lotteries. I was told that the primary purpose of these pillars was for the posting of war announcements; but, at that time I never expected to see them used in that way.

However, the last day of July was an anxious time for us in Berlin, and the unexpected happened. We found on these pillars the announcement, printed in black on red paper, that Germany was declared to be in a "state of siege."

Then followed "mobilmachung," a period of ten days, during which the troops were assembled, the automobiles were seized, and the horses were ordered into the service of the government. These pillars played no small part in announcing these arrangements and the program for each day. The railroads are owned by the government, and all regular passenger service was suspended during these ten days, in order that the entire equipment might be used to transport troops to their various posts on the frontier.

The German people are fond of keeping written records. This is well illustrated in the work of the police. The police are really clerks, rather than enforcers of the law, and they keep complete and detailed records of the movements of each person in the city. Within five days after your arrival in Berlin, you must fill out and send to the police, a paper stating your name, age, date and place of birth, where you are stopping, and your "stand" or position in life, also your "religion." On leaving the city, you must make an *abmeldung* to the police within twenty-four hours of

your departure. So the result was, that at the beginning of the war, the police in Berlin had the names of each English, Russian and French man, and knew exactly where he could be found.

Among the Americans, there was great excitement, and hundreds thronged the Embassy day after day. Everybody was told to go home; "Flee like an antelope," a prominent official said. Panic conditions seemed to prevail. Many were school teachers and *had* to go home. Many were unable to obtain better than steerage accommodations, and suffered hardships on their homeward journey, who naturally would have traveled first class.

The Americans who remained, however, were safer and more comfortable in Berlin, than those who went away. Invariably we received kind and courteous treatment everywhere.

At first, the theatres and places of amusement and many cafés were closed for a few months, but in January they were open again, and very good opera was presented at each of the two opera houses. Through moving pictures, the people were kept informed and enthused regarding the progress of the war, as they saw pictures that were taken each week at the front.

Everywhere were found evidences of intense enthusiasm among the people as to the probable outcome of the war. This unquestioning faith that Germany will win, has created determined resolution and undaunted courage and zeal among the soldiers.

But there is a very sad side in this war. You meet more and more women, who are wearing black, whose loved ones can never return to them. We saw, too, many crippled and wounded soldiers. Lazarettes, or hospitals, were established in various parts of the city, and the women of Berlin resolutely took an active part in the care of the wounded men, and in the care of the families who were without means of support, owing to the loss of the bread-winner. There were established several soup kitchens, and even knitting schools, where the women who were in need and without employment could earn living wages while knitting stockings for the soldiers at the front.

Meanwhile, the immense industries in Germany continue as the women are learning to take the place of the men, who are summoned to military duty. We saw women caring for the public parks, and caring for the crops in the fields, women were punching the car tickets in the subway, women were car conductors, and we even saw women carrying the little ladders for washing windows.

There is today a strong undercurrent of feeling among the people, who dare not say out loud what they think and discuss among themselves. For there is a growing desire for the end of the war, and for peace.

Whatever the outcome of the war, the people of Germany have shown unusual ability in forecasting the needs of their country and in adequately planning so long beforehand for these needs, as they see them.

The secretary has received a number of interesting documents from John I. Solomon, relating to the pearl fisheries of Ceylon. They include a Christmas number of the *Times*, published at Ceylon, A Memorandum on the Pearl Fisheries of Ceylon, A Process for Preserving the Pearl-Oyster Fisheries and for Increasing the Value of the Yield of Pearls—from the *Bulletin* of the Bureau of Fisheries, 1908, A Visit to the Pearl Town of Ceylon, and A Contribution *A L'Étude Des Perles Fines De La Nacre et des Animaux qui les Produisent.* These five articles all refer to Solomon's interesting process of the application of the X-ray method to the detection of pearls in oysters, thereby obviating the necessity of killing oysters to ascertain whether they contain pearls or not. By the old-fashioned method, about 90 per cent. of all the oysters caught contained no pearls at all and were needlessly wasted, while of the 10 per cent. which were pearl-bearing, a considerable

portion contained pearls which were not of marketable size. These oysters can be examined by the X-ray without injury. If they do not contain pearls, they are put back into the sea. Those which contain pearls that are too small for the market are saved and kept in specially guarded beds until the pearls have grown to sufficient size. Only the oysters which are found to have pearls of marketable value are opened. This method means a great conservation of the pearl oyster, which has rapidly been becoming extinct under the old methods of pearl fishing.

In a number of the Technology Review some few years ago Solomon's process for detecting pearls in oysters, without destroying the bivalve, was described. The increasing value of pearls made pearl fishing a lucrative business for a time and resulted in almost the complete destruction of the oldest oyster beds, where the best oysters were formerly found. This is true of most parts of Australia, the waters of Thursday Island, Costa Rica, the Mergui Archipelago, lower Burma, as well as other fields.

Solomon conceived the idea of using the X-ray for detecting the presence of pearls in the living oysters some years ago. His earliest plan was to examine each oyster with the fluoroscope, but as he proceeded in his investigations he found that this plan was too slow, and he has patented processes for taking radiographs of oysters in especially made receptacles, the receptacles being numbered so that each can be easily identified. The radiographs are immediately developed and the presence of pearls is indicated in the picture. The oysters containing pearls of sufficient size to be marketed are opened and the pearls secured. Those having smaller pearls are put back into the water to develop still further. Sometimes air bubbles on the plate, coral on the outside of the shell or imperfections in the film will indicate a pearl that does not exist. With practice, however, these mistakes can be eliminated so that errors become very rare. With sufficient help and proper auxiliary appliances four hundred oysters a minute can be radiographed, as has been done at Solomon's plant at Ipantivu Island, a province of Ceylon. Here his company had about $50,000 invested in buildings, beds, equipment, photograph supplies, etc.

The pearl fisheries about Ceylon and the Mergui Archipelago, which were formerly sparingly worked by native divers, had been depleted by companies having extensive diving outfits and apparatus for the wholesale capture of the pearl-oyster. Solomon went to Ceylon in 1906, when the fisheries had been almost ruined by these wholesale operations. Here, meeting with business obstacles which proved insurmountable, he determined to start anew in some other location, and having heard that two government biologists had been sent out to report on the Mergui pearl fisheries, had a conference with them in Rangoon describing his X-ray process. This, however, did not appear to interest the Burma government, so Solomon then interested some prominent residents of Rangoon

in his invention. The result has been the formation of the Burma Shell Company, Limited, of Rangoon, and the procedure now is to undertake the artificial production of pearls; that is, to introduce nuclei into the shell about which the oyster will build a natural pearl. Every oyster can be made to produce at least one pearl, and the large Burma oysters are capable of producing several. The process gives promise of being completely successful.

1894.

S. C. Prescott, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

The class is represented on the Faculty by another '94 man, as George Owen has been appointed assistant professor of naval architecture. He still devotes a portion of his time to the active practice of his profession, having an office in Newton, and supervising work in various places. During the past few years Owen has not only designed racing yachts, including the *Defiance* which participated in the races for the defender of America's cup, but also he has supervised the building of a large variety of other vessels both for private individuals and for the government. It is a great pleasure to see him again at the Institute and to know that a '94 man is bringing such valuable experience to teaching work at the Institute.—While in San Francisco for a very brief visit in August, the secretary had the pleasure of meeting P. H. Coolidge and J. C. Nowell. These two members of the class represent the American Bell Telephone on the Pacific Coast and are in charge of all telephone service of enormous area extending from Canada to Mexico. Both men hope to be in Boston next year and may be sure of a hearty greeting from the eastern members of the class.—Schiertz, finding conditions in Mexico not well adapted for mining engineering, is at present curator of one of the divisions at the Boston Museum of Fine Arts.—The last report from A. M. Robeson gave his address as London indicating that he is retired from active engineering service in South Africa.

The secretary spent the summer once more in the tropics and therefore missed the occasional visits of '94 men to the Institute which are likely to take place during the summer. His travels included Colombia, Panama, Costa Rica, Jamaica, Honduras, Guatemala, Belize, as well as two trips to California; in all, something over eighteen thousand miles in three months.

With the exception of Coolidge and Nowell, no other '94 men were encountered, although several other Institute men were met in various places. One or two mining engineers just out of Mexico were met on a train from New Orleans to Los Angeles. A former woman student at the Institute, and now a resident of Santa Marta. Jamaica, was met on the steamer from Panama to Jamaica.

Also the secretary had the pleasure of spending a day with R. W. Lodge, '79, in Redlands, Cal.

1895.

WILLIAM H. WINKLEY, *Sec.*, 44 Kilby Street, Boston, Mass.

The '95 men in and around New York had their fall luncheon at the Technology Club, New York, on Tuesday, October 19, at which the following men were present: Benjamin Adams, L. W. Ballou, A. L. Canfield, W. B. Claflin, H. E. Davis, B. C. Donham, A. W. Drake, J. H. Gardiner, J. H. Gregory, E. H. Huxley, F. T. Miller, J. D. Moore, S. S. Sadtler, F. C. Schmitz, Gerard Swope, T. H. Wiggin, L. K. Yoder.

Some of the men, like Ben Adams and Sadtler, came from Philadelphia, Yoder came from Pittsburgh, on his way to Bermuda, and Ballou came from Woonsocket, Rhode Island. A number of the men had not seen each other for twenty years, and it was a very pleasant gathering.

The twenty-first reunion of the class, to be held in 1916, was discussed, and a committee to coöperate with the Boston committee was appointed, consisting of F. T. Miller, chairman, and Messrs. Canfield and Huxley.

A number of letters were received from men who could not come, expressing their regret, and their interest in the class, and also their interest in having a good reunion next year.

From the *Electrical World* we quote as follows:

Robert K. Sheppard, the president of the recently organized Associated Manufacturers of Electrical Supplies, who until recently was manager of sales for the insulated-wire department of the B. F. Goodrich Company, Akron, Ohio, has been appointed sales manager of the Simplex Wire & Cable Company, Boston, Mass. Mr. Sheppard was born at Boston in 1871 and, after attending the Newton High School, was graduated from the Massachusetts Institute of Technology in 1895 as a chemical engineer. Entering the employ of the Washburn & Moen Manufacturing Company, Worcester, Mass., he continued with that firm and with the American Steel & Wire Company, which absorbed it, until 1912. In 1899 Mr. Sheppard represented the insulated wire department of his company in New York City, and in 1902 he moved to Chicago, where he represented the insulated wire and rope department. In 1904 he took charge of the Philadelphia office, remaining there until 1912. In that year he joined the staff of the Diamond Rubber Company of Akron, Ohio, manufacturer of rubber goods, which was afterward amalgamated with the B. F. Goodrich Company. Mr. Sheppard was very active in the work which led to the formation of the Associated Manufacturers of Electrical Supplies and served as chairman of the preliminary meetings leading up to the formation of the association. In recognition of his services he was, last March, presented with a silver loving cup by the members of the organization committee.

1896.

CHARLES E. LOCKE, *Sec.*, Mass. Inst. of Tech., Boston, Mass.
J. ARNOLD ROCKWELL, *Asst. Sec.*, 24 Garden Street, Cambridge, Mass.

The secretary during the past summer achieved a long cherished desire and visited many of the mining districts of the United States. Incidentally many alumni were seen, including a good

proportion of '96 men. The first stop after leaving Boston was at Burlington, Vermont, where Prof. E. C. Jacobs was called out at an early morning hour. Jacobs himself later went on a Western geological trip with a party under Prof. D. W. Johnson of Columbia University, and in August the pleasure of his company was enjoyed for three days in San Francisco.

Next, in Montreal, F. E. Field was interviewed over the telephone. He was very busy getting out some estimates, but later he sent the following notes regarding himself:

Since graduation, my guardian angel has guided me to positions in Boston, Philadelphia, Pittsburgh, New York and finally to Montreal. Practically all of my work has been in connection with water works problems, practically with the design and construction of filtration plants. Here in Montreal our work is interesting, troublesome, and instructive, all of which is food and drink to a Tech man.

We have a 50 million gallon filtration plant nearing completion and expect to start an extension to double its capacity early next year. The contract for the enlargement of an aqueduct five miles long for power development is also under way. In addition to these works, it is proposed to build a 10,000 H. P. power and pumping station, construct several concrete bridges across the aqueduct and proceed with other improvements. The total cost of the works contracted for and proposed will exceed $7,500,000. On all these works I am, unfortunately perhaps, the resident engineer.

Although there are quite a number of Tech men in this vicinity, our gatherings as such are very infrequent, which is greatly to be regretted. Will be glad to welcome any of my former classmates whose paths lead in this direction.

We must all plan to meet in Boston for our twentieth anniversary.

A call was made at the office of D. J. Spence, where it was found that, owing to the quiet state of business along architectural lines, Jerry had taken the opportunity to go to Toronto to train for a commission at the Stanley Barracks. He was reported to be in good health. His work has included some big jobs in Canada—the Belgo-Canadian Department store in Montreal (the largest in Canada), the complete plant of the Laurentide mills, and country houses, etc., in various localities.

In Toronto an unsuccessful attempt was made to reach W. M. Andrew by telephone. A written request was made for some word from him but no reply has been received. A similar letter to Harry Hart at Hamilton met with the same response.—Arthur Morrice was located in Toronto, where he is manager for D. Morrice, selling agents for the Canadian Cotton mills. Since 1896 he has lived in Montreal and Toronto but has never been back to Boston and has had little news from Tech except that gained by occasional correspondence with his classmate, Charlie Morris.

A few hours' lay-over which the secretary had in Chicago was spent at the opening of the new motor car speedway and no '96 men were met. Neither were any run across in Missouri, and it was not until Colorado was reached that they were again in evidence. At Denver Mort Sears was found to be absent on business connected with his job of mineral inspector for the U. S. General Land Office. However, he has kindly written as follows:

I was working in the Southern Division when you were in Denver, having been assigned there from February 1 to July 17. My work took me all over Arkansas, Louisiana and Florida and I enjoyed it because of the change, though for a full appreciation of the joy of living, give me Colorado! In May, the Red River Oil Field of Louisiana began its production, and when I left it was producing at the rate of 24,000 barrels per day. Shreveport is the liveliest town of its size in the whole South. Oil has made it. The state is now outputting $10,000,000 worth of oil annually.

There is quite a bit of excitement in lead and zinc in Northern Arkansas, although comparatively few people seem to have realized the possibilities there.

In Florida the war has played havoc with the phosphate industry. That state produces about $10,000,000 worth of phosphate yearly, a large percentage of which goes abroad under normal conditions. Now, a large number of plants are closed down. I was prospecting for phosphate for about three weeks—and the red bugs were prospecting for me. I found the phosphate all right and they evidently found what they were out after.

Everywhere land values are advancing. If you want to exercise your homestead right you'll have to hustle!

I wish I had a boy to put in training for the new Tech, but maybe I can persuade my daughter to study geology. The number of rocks she submits for inspection show the spirit of industry if not of discrimination.

Sunday and Monday, July 4 and 5, were spent under the hospitable roof of Gene Laws at Salida, Colorado, where he is superintendent of the lead smelter, and the day following the two of us spent a most interesting day in Leadville. Laws had ordered an Overland car but unfortunately it was not delivered until July 10. Laws has a very neat and well kept smelter which is a delight to visit. He has also made a very thorough study of all details of operation, especially costs, so that the smelter is run in a very efficient manner.

In Salt Lake City, L. T. Cannon turned up at the Tech banquet. Always before, when the secretary has called upon him in Salt Lake, he has been out of town. He reports a son entering Tech this fall to study architecture. In addition to a great deal of small work, Cannon has designed the Hotel Logan and the new Central Building of the University of Utah. The latter is a very striking building easily surpassing the buildings surrounding it.

Montana, Idaho, Washington, Oregon and Northern California were passed through and only one Tech man met, H. S. Taft, at Seattle. He has been so busy in concrete construction work that he has not found time to get married. With his continuing bloom of youth and his natural sociability, one could not help wondering how he had been able to escape the matrimonial noose.

In San Francisco, the secretary attended a meeting of the local Tech Society but no '96 men were present. Charley Hyde furnished entertainment at Berkeley and supplied the use of his automobile. In addition to his teaching work at the University of California, he has been busy on the Los Angeles aqueduct case as an expert on the sanitary features and possible pollution of supply; also as a member of the Sacramento Water Commission, dealing with the details of pumping, distribution and future

supply. The Sacramento water is now treated with chlorine in accordance with his recommendation. Time did not allow calls upon other '96 men in San Francisco except Walter Leland. He was found to be out of the city on business, but on October 14, he called in Boston where he had come as expert witness on the Steamship *Creole* case between Southern Pacific (Morgan Line), and Fore River Company. He reports that he is representing various Eastern machinery firms in San Francisco and that business has been good. He lives on a seven and a half-acre ranch at Walnut Creek, about twenty-seven miles East from San Francisco. His land is planted mainly with nut trees. He runs across Mead once in a while, and occasionally sees Bowie, who is busy with the manufacture of his patent signal switch for railroads.

Notes were written to Mead, Norris, Bowie and Faville asking for information, but, with the exception of the last named, no reply has been received even though second requests were sent in each case. Faville reports as follows:

Born in California, November 13, 1866. Father's name—Charles Faville, mother's name (maiden name) Emma Louisa Baker. Mr. Faville was married September 20, 1901. Received his early education in Western New York, where he began his architectural education. Later he entered the Massachusetts Institute of Technology as a special student under Désire Despradelle, and after completing his course was employed as an instructor in that institution for a short period. Entered the office of McKim, Mead & White, of New York, where he spent four years, and upon returning to California, entered into partnership under the firm name of Bliss & Faville. The firm has erected the following important buildings: St. Francis Hotel, Tahoe Tavern, Columbia Theatre, Children's Hospital, Prescott School, Eastman Kodak Building, University Club Building, The Liverpool & London & Globe Insurance Building, Oakland Hotel, Bank of California, Savings Union Bank & Trust Co., Oakland Library, Masonic Temple, Balboa Office Building, Jas. L. Flood residence, the plan and erection of a city for the Colony Holding Corporation, at Atascadero, California, buildings for the University of Nevada and many others.

Mr. Faville received an appointment as one of the three architectural commissioners, forming the Executive Architectural Council, for the Panama-Pacific International Exposition Company, of 1915, and to him was assigned the study and designing of the Great Wall forming the exterior of the eight main buildings, with their many towers, gateways, domes and doorways, and all work in connection with these excepting the courts formed by the buildings themselves. Mr. Faville also designed the enclosing fence or Living Hedge, forming the entrance to the Exposition.

Mr. Faville is the president of the San Francisco Chapter of the American Institute of Architects.

Any one who visits the Exposition will witness the splendid work that Faville has done in designing his part of the work.

Jack Willis, who was formerly with Faville, came East upon the death of his father, and his present address is 306 Hyde Park avenue, Jamaica Plain, Mass.

In Los Angeles, R. S. Hardy was seen at the meeting of the Tech Society. He has been for six years with the Los Angeles Gas Company as construction superintendent. Since 1896 he has gradually worked West and finally reached the limit. He

reports that he is married but has no children, drives a Ford car, is a deputy sheriff, and so far has kept out of jail. The secretary was unable to understand clearly the logic or natural sequence of these three last phrases, but it is to be supposed that if he were not a deputy sheriff, the driving of a Ford car would land him in jail. The apparent conclusion is, that when as an individual he gets to speeding he arrests himself in the rôle of deputy sheriff, but escapes jail on the proper application of a bribe on the part of the individual to the part of the deputy sheriff.

F. M. Ashley was found in the architect's office of John C. Austin, Baker Detwiler Building, Los Angeles. His family includes only a wife. He has worked as an architect on various big Los Angeles buildings, and is now on the new Los Angeles High School building. —W. J. Batchelder, who was supposed to be in Los Angeles, could not be located.

In Arizona, an unfortunate combination of events prevented a meeting with Frank Thanisch, who is superintendent of the Kelvin Sultana mill at Kelvin, Arizona, but a short talk was enjoyed over the telephone.

On the trip home, via New Orleans and New York, no more '96 men were met.

While on a train in California a fellow traveller from Akron, Ohio, mentioned the splendid work that Paul Litchfield has been doing with the Goodyear Rubber Company, and his recent gift of $100,000 toward a fund for the employees welfare. This fund has been turned over to the "Service-Pin" Association made up of men who have five, ten or fifteen years service to their credit, or who wear the service pin of the Flying Squadron. The following is the letter of gift to the Board of Directors of the association:

Confirming promise made by me on July 15, 1915, I herewith hand you my check for $100,000 to be used for the benefit of Goodyear Tire & Rubber Company employees, the Goodyear Service-Pin Association acting as trustees. This fund has been given in the name of myself and my wife, to be known as the Litchfield Fund for Goodyear Tire & Rubber Company factory employees.

The following restrictions are placed upon this gift: First, that the principal sum of $100,000 be kept intact for five (5) years; and second, at least $50,000 of this fund be kept intact for ten (10) years. The voting power for electing directors, and the other acts for determining its use, is to be vested in the Factory Service-Pin employees of The Goodyear Tire & Rubber Company, each having one vote for each five year pin, and one vote for each Flying Squadron pin, issued under the present rules governing their issue.

In presenting this fund, some of the fundamental ideas behind it may be in order.

This fund is given with the idea of sharing with my co-workers a part of the savings which I feel they have shared in producing. My idea for its use is to have it act as a capital fund for their benefit collectively, similar to the savings or wealth of the individual for his future benefit. Its continued existence in considerable amount should tend to unite Goodyear workers, and give them a sense of responsibility, educating them in business methods, promoting thrift and saving, developing loyalty, efficiency and coöperation, and cause them to feel they have something saved up for their use in order to tide them over the emergency of a "rainy day." The income may be well used for such things as are not the logical function of The

Goodyear Tire & Rubber Company, or other organizations for employees now in existence.

As this fund was made possible by confidence in Goodyear, I recommend for your consideration the investment of a considerable portion of this fund in Goodyear securities, from the standpoint of both good business judgment and Goodyear coöperation.

(Signed) P. W. LITCHFIELD.

The gift was announced on the occasion of a banquet of the Service-Pin Association when Litchfield received his pin for fifteen years' service. The fund represents the entire salary for fifteen years which Litchfield received, together with sufficient interest to round out $100,000. At the banquet he said:

"There are four essentials to success. They are honesty, efficiency, team-work and loyalty." In speaking on efficiency he remarked that good intentions pay no profits and have no value. It is results that count. A man must work accurately and quickly. He must get there before the other fellow if he wishes to be successful, for the doctrine of the survival of the fittest will always hold true. He advised the avoidance of entangling alliances as being as safe a rule for the guidance of individuals as for the governments. Entangling alliances of all kinds, whether financial or economical, were denominated as dangerous. Urging team-work, he pointed to his own success as an example of what it means when an organization works together. Alone, or with the wrong kind of an organization, his efforts would have been largely in vain, but with Goodyear coöperation he had succeeded in increasing the factory fifty-fold. "Litch," as he is called, is factory manager and has always had unusual thoughtfulness toward the great body of men working with him. Litchfield has had this altruistic plan in mind for some years and has expressed the hope that his gift will result in a lasting spirit of coöperation between the company and the men, and in promoting the efficiency of the workers. Litchfield modestly disclaims any credit for his generosity, but it signifies a sociological move the result of which cannot now be estimated.

It was on July 15, 1900, that Litchfield came to Akron as superintendent of the Goodyear factory. He had previously been with the International Tire Company which sold out later to the Michelin Tire Company, and also with the New York Belting and Packing Company, a subsidiary of the United States Rubber Company.

When Litchfield took his position at the Goodyear, there were 176 people on the payroll, in factory and sales departments. Now the Goodyear payroll has between 7,000 and 8,000 names on it.

In order to appreciate the requirement that only service-pin men may be stockholders in the Litchfield fund company, it is necessary to know something of what the service pin means.

When an employee has worked for the company five years he is given a service pin, an honor that is much esteemed by the men. At the end of ten years he gets another service pin, at the end of

fifteen years a third pin, and so on. Then there is the Flying Squadron service pin. Each year forty of the most reliable workmen are selected to take a special educational course along with the regular employment. They are under special instructors, these forty men, and study economics, business methods and manufacturing practice. They perform all the operations in the shop during their three-year course and at "graduation" become general all around men. They then receive a special service pin. These are in addition to the regular five-year service pins.

Each service pin will entitle a man to one share of stock in the company to be organized to handle the fund.

In connection with the recent completion of the Arrowrock Dam near Boise, Idaho, which is receiving much publicity in the press of the country, it should be noted that much of the credit for the satisfactory completion of this large undertaking is due to Charlie Paul.—Through the kindness of Charlie Lawrence, we are able to report that F. J. Hubbard, '96, for whom we have had no address, has been at 105 West 5th street, Plainfield, N. J., for perhaps thirty years.—Von Holst has been mixing up with big men. A suit has been brought against Henry Ford by the firm of Von Holst and Fyfe, Chicago architects, who recently started construction of a country home for Mr. Ford, near Detroit. The plaintiffs were discharged by Mr. Ford, and now are suing for payment for services rendered. Mr. Ford said the plans called for an expenditure of $500,000, which he thought "too much to pay for a home," and he ordered the estimate cut about $275,000. Estimates calling for an expenditure of $230,000 for the house proper were read into the evidence, the swimming pool alone amounting to $73,500. —Billy Anderson's firm, the Ferro Concrete Construction Company of Cincinnati, of which Billy is president, has recently inaugurated a policy of sending out interesting photographs of structures that they have built.—Eddie Mansfield attended the sixth annual convention of the Electric Vehicle Association of America in Cleveland in October, and was elected vice-president of the association.—John Rockwell took his annual vacation in September and spent six weeks with his parents in Tennessee. He stopped in Savannah but found Smalley out of town. Probably Smalley has gained wisdom from the experiences of past years and knew about when John would arrive so was able to arrange a convenient absence. John is delivering his annual lectures on Hygiene to M. I. T. freshmen in his capacity as medical adviser of the Institute. He has recently opened a Boston office in the Charlesgate in addition to his Cambridge office at his residence.—Two papers have been published recently by George K. Burgess in the publications of the U. S. Bureau of Standards. No. 249 is "The Emissivity of Metals and Oxides. IV Iron Oxide" and No. 254 is "A Study of the Quality of Platinum Ware." Burgess is due to give a lecture before the Franklin Institute in Philadelphia on March

30, 1916, on "Some Problems in Physical Metallurgy at the Bureau of Standards."—Fuller (M. L., not Freddie) is achieving an international reputation as a geologist since severing his connection with the U. S. Geological Survey a few years ago. He is now back in Brockton after an absence of more than a year and a half in China where he was engaged in geological explorations for one of the largest American corporations. During these explorations he covered some 8,000 miles of territory, much of it never before visited by a foreigner, including portions of Manchuria and Mongolia as well as the great provinces of Chihli, Shantung, Shensi, Shansi, Kansu, and Honan in China proper. The following article will be found most interesting:

As most of the explorations were in regions where there were few inhabitants, and where even Chinese food was unobtainable, it was necessary to carry all provisions on muleback, as many as 40 of these animals being required at times to transport the camp equipment, the camp party including interpreters, servants, soldiers, etc. There were generally 10 to 15 men in the party, of whom all were Chinese except Mr. Fuller. Tents were sometimes carried, but as a rule camps were made in the crude mud Chinese inns or native houses, but temples, Mongolian skin tents, and even caves dug out of the soft earth were frequently used.

The districts visited by Mr. Fuller included several supposed to be very rich in undeveloped mineral resources, but Mr. Fuller is of the opinion that the amount and value of such resources have been greatly overestimated by foreigners, except perhaps coal, of which there are undoubtedly extensive deposits, some of which are of immense thickness. One vein seen was 100 feet thick, or 10 times that of the best American bed now being worked—the famous Pittsburg coal.

Most of the explorations were in mountainous regions, at altitudes of 3,000 to 6,000 feet, but with occasional peaks rising to 8,000 or even 10,000 feet. The scenery is described as very grand in places. In Mongolia, however, sandy deserts stretch away for hundreds of miles with hardly an inequality larger than a sand dune to break the monotony. In the desert, camels were used in place of mules by some of the party, because of the scarcity of fodder and water for mules. Contrary to the usual impression that camels are used mainly in tropical regions, they are in China employed principally in the north, where the snows are deep in winter and the temperature sometimes drops to 15 or 20 degrees below zero.

There was naturally more or less real adventure connected with the explorations. Many districts were infested with robber bands, much as was Europe in the middle ages, and a guard of soldiers under command of Mr. Fuller usually accompanied the party.

At one time the escort numbered as high as 40. On several occasions the party was followed by robbers, and several of the latter were killed in engagements with local soldiers, and a few were captured by one of Mr. Fuller's associates. Mr. Fuller personally passed through a portion of the famous White Wolf band, which at one time numbered 6,000 to 8,000 men and which swept, pillaging and burning, through several provinces a year ago this summer. He was not molested from the fact that the leader was careful not to annoy foreigners, and thus bring down upon himself foreign troops.

Several mules were lost from falling from the steep mountain trails, and Mr. Fuller's own horse at one time rolled down a 250-foot cliff, but with no worse result than an enormously increased appetite. Fortunately Mr. Fuller was not riding at the time.

Much trouble was experienced in the north during the winter in fording ice-filled rivers. On one occasion five of the party were thrown into the freezing waters by the plunging of the horses when struck by floating ice-cakes. On another occasion one native lost his life while rafting the party across a swollen stream.

Notwithstanding the many hardships, the health of the party was excellent, and even colds were unknown. Mr. Fuller says he likes the country, and can enjoy the food, even locusts and sea-slugs, and is fond of the people, although he can see no great hope of overcoming the universal graft and lack of patriotism which prevents them from coöperating in business or uniting in honest government.

He considers the present president a man of great ability and power, and one who has obtained remarkable accomplishments since he has been in office. The government, though nominally a republic, is practically a limited monarchy, which is inevitable until the people are able to govern themselves, which, Mr. Fuller thinks, will be a long time in the future.

Mr. Fuller is inclined to minimize the effects of the recent Japanese demands on China, a part of which were simply to get back rights they acquired through the Japan-China war and which they were prevented from enjoying by the action of Russia and Germany. Other rights demanded were in no wise different from those already obtained by England, France and other countries through diplomacy.

Before returning to America, Mr. Fuller made a 1,600-mile trip up the Yangstse River to within 300 miles of Tibet, passing through the world-famous gorges, where the river—larger than the Mississippi—is compressed in a canyon 2,000 feet deep and only 300 feet wide.

Mrs. Fuller accompanied her husband to China, remaining at the capital, Peking, most of the time. She made the Yangstse trip with him.

Mr. Fuller will resume his practice of consulting geologist and managing geologist of the Associated Geological Engineers, with offices in Boston, New York, Pittsburg and Washington.

Russell W. Porter has accepted a position as instructor in the architectural department at Technology.

A special feature of the class news in the January issue of the Technology Review is to be the work of Technology men in the public service, national, state, city or community, including investigation or research work which will result directly in benefit to mankind. The April issue will feature reminiscences of Institute life. A request is hereby made that all classmates who have done anything for the public, or who remember anything suitable for publication send it along without delay.

Finally, as a last item of class news, comes a reminder that next year is the twentieth anniversary of graduation of '96. Other minor events coming next year are the national presidential election, removal of the Institute to its new site, and a big celebration at M. I. T. in June. The combination of these events should bring back a great mass of alumni. It is proposed to arrange the '96 reunion so that it will just precede and practically be a part of the big reunion. The Hartford Yacht Club at Saybrook Point, Connecticut, has already been reserved for '96. Men who attended the 1911 reunion at Squam Lake, N. H., will perhaps regret that we do not go there again, but unfortunately it is no longer available. Moreover, the Connecticut location is far easier reached by the average '96 man than Squam Lake. It is no farther from Boston and is practically on the route of men from the West and Southwest. Previous classes who have met at the Yacht Club report it to be ideal for a reunion. A class meeting will be held in Boston in the near future when definite plans will be made. But now is the time for every men to decide that he will be present

unless it is known at the outset that it will be an utter impossibility. Begin to save your nickels and dimes and arrange your work eight months ahead so that you will have a week free in June, 1916.

1897.

JOHN A. COLLINS, JR., *Sec.*, 67 Thorndyke Street, Lawrence, Mass.

Three members of Ninety-Seven who are abroad failed to reply to the earnest request of the secretary for letters. Outside of Canada our records show only two men who are not in the United States—Con Slade, who is in Paris, and Lincoln Crocker, who at last reports was in Santiago, Chile. Perhaps our Canadian friends resented the intimation that they "lived abroad" and refused to be brought under that classification. Possibly they have all gone to war.

At the request of the editor, the secretary announces that the January number is to be devoted to the services that Institute men are giving without compensation to the state, the municipality and the community. Now it is evident that this information must come from the men themselves, and if this column is to contain items of interest in this or any other connection, the men must coöperate, and send on the facts.

The April number will contain letters of reminiscence from the alumni. As the editor suggests, some of these will have to be edited (this means censored) but even then '97 can bring to light some rare old events from '93 to '97. Now is the time to get busy—take time and write up the choice happenings and impressions that you can recall and send them on to the secretary.

Franklin Union has again opened for the year, and under the very successful management of W. B. Russell, '97, will continue to increase its enrollment of students. Last year twenty-one nationalities were represented besides American, which shows the extent of the field covered.—Jas. W. Smith, II, has severed his connection with the Wyman Gordon Company of Worcester, manufacturers of automobile parts.—The John S. Boyd Company (Boyd, V) of Williamstown, Mass., manufacturers of corduroys, velvets and fustians, are enlarging the plant by the erection of a two-story addition of concrete and brick. The new building will be used as a bleachery.

1898.

A. A. BLANCHARD, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

William W. Stevens sends to the REVIEW the following letter from Shanghai, China:

At the instigation of one "Happy" Adams I am invited to write you a personal letter for the REVIEW. I find that this is much easier said than done, as there is so much to say about matters in the East that anything that can be put into a

letter is so hopelessly inadequate that it only gives a false impression. Adams will tell you all about the Technology Club of China, so I need not trouble about that. There will be plenty of people who will tell you all about the war, so that is eliminated. Business out here seems to be going along about as usual, with perhaps a little depression due to the upset financial condition all over the world. Probably we have been as little affected as anyone by the great struggle.

As far as my personal position out here is concerned you can see that from the returns I have made for the alumni *Register* (manager of Construction Department of the Standard Oil Company at Shanghai, China) and as for the other Technology men out here I have only one fault to find—there are not enough of them. This is a real country, and not the edge of heathen desolation, as most of you fellows imagine, and there are as good opportunities in the East as there are anywhere on earth, and probably more of them lying around loose than in most parts of the world. Don't imagine we are exiles, or that we pine unduly for our mother country. Most of us who have been out here a few years never want to go back to stay any way, which tells its own story.

The Technology Club of China will extend the right hand of fellowship to any Technology men who lands within hailing distance.

We send you greetings and best wishes from the Far East.

Everett N. Curtis, who has conducted important cases involving the Sherman law, has during the summer published a book dealing with that law. The following review of the book is taken from the Boston *Transcript* of July 24, 1915:

It would seem that an act passed by Congress twenty-five years ago should be clear before the law and the world, but complications and confusion in the Sherman Act of July 2, 1892, seem destined to go on forever. Mr. Curtis, who is a member of the Boston bar, has produced a volume which will tend to clarify many previously puzzling points and also to show what has been done by courts in many cases under perhaps the most famous law in the history of the United States.

The precise language of the decisions has been followed by Mr. Curtis, except where prolixity or constant repetition of the legal principle makes condensation desirable. He also emphasizes the importance of the Federal Trade Commission in its bearing on the Sherman law, and he carefully notes points in this connection. Full text of both laws are given in the appendix, and a broadly comprehensive index showing the way to any point in controversy covers many pages of this valuable volume.

We note in the New Bedford *Standard* of June 22, 1915, that James S. McIntyre has been selected to draw plans for the new central fire station at New Bedford.

1899.

W. Malcolm Corse, *Sec.*, 106 Morris Avenue, Buffalo, N. Y.
Benj. S. Hinkley, *Asst. Sec.*, North Station, Boston, Mass.

It is with a great deal of pleasure that we are enabled to publish a letter from Frederick R. Sites from Shanghai, China, dated June 23.

A Greeting from far Cathay! There should be a dozen good letters for the November Review from China, for we have nearly twenty Tech men in our alumni association, including the venerable K. Y. Kwong, '84, engineer-in-chief of the Peking-Kalgan Railway, and men from many classes down to the 1914 spring chickens.

Selling railway bridges and other steel products to our Chinese friends has been a most delightful experience in many ways. One great sorrow, however, has entered our life here, which cannot be quenched by any pleasures—nor would we wish to quench this sorrow. We are compelled to accept it as one of the tolls claimed by the climate.

Today I am writing while traveling from our home city, Shanghai, to the old Imperial City, Peking, now the capital of this vast new Republic. Our conveyance is not a sedan chair, such as my parents used fifty years ago, nor a wheelbarrow, nor a more modern jinrickshaw, but a "train de lux" moving over a substantial rock-ballasted roadbed at forty miles per hour—not the speed of a Twentieth Century Limited, but quite fast enough for a country just awakening from her long sleep.

The city behind us, Shanghai, is not really China. To be sure there are myriads of Chinese in Shanghai, constituting 95 per cent. of the population, but the government is entirely in the hands of the foreign Municipal Council. The wide streets, the trolley cars, the luxurious automobiles, the beautiful homes, the imposing office buildings, schools and churches proclaim the Occident rather than the Orient. We often remark "This is not living in China."

The old Imperial City toward which we are now traveling is very different. To be sure it is the capital of the great new Republic, but the foreign invasion has not penetrated its walls perceptibly, except in the Legation quarter. The pink walls and the yellow tiles of the "Forbidden City" have not been profaned with the "trolley"; they still form a picturesque background for the famous Pekinese cart, the camel train and the donkey.

One "Call of the East" will soon pass into history, namely, "Come to Peking before the tram-car arrives." One member of the class of '99 now issues this call, but it is asking too much to expect him to do more than that, for we shall not raise a protest when the "Peking Street Railway Company," which is bound to materialize, comes into the market for steel rails, steel structures and trolley wire.

Mrs. Sites and Kenneth join with "Dad" in cordial greetings to our M. I. T. friends, past, present and future.

Announcement was made of the marriage on June 30 of Lesley Frasher Church (Smith '11), daughter of Mrs. Duane H. Church of 599 Center street, Newton, to Henry C. Eaton, of Waltham. From newspaper reports we learn that Eaton is president of the Waltham board of aldermen and Republican candidate for mayor. —Announcement was made of the marriage on October 16 of Katharine Lesser Drumtra, of Binghamton, to James Benjamin Ellery of Erie, Pa.

The following clipping from the *Electrical World* of October 28 shows what some of our men are doing in a large way:

Mr. Bassett Jones, consulting engineer, New York City, whose valuable article on "Mobile Color and Stage Lighting," which has been appearing in the last four issues of the *Electrical World*, is brought to a close in this number, has had a varied career in the engineering and design branches of the electrical industry and illuminating science. Born on Staten Island, N. Y., in 1877, he received his preliminary education in New York City and afterward attended the Massachusetts Institute of Technology. In 1901 and 1902 he served successively with the Sprague Electric Company, the New York Edison Company, the New York Telephone Company and the Electric Storage Battery Company, and in the last-named year was manager of the New York office of W. N. Tobin, an engineering contractor. In 1904 he was made manager of the Pittsburgh office of Clark & MacMullen, consulting engineers, and from 1904 to 1906 he acted as consulting engineer for Douglas Robinson, Charles S. Brown & Company, having personal charge of thirty-two isolated plants and of equipment in 500 buildings in New York City. Since 1907 Mr. Jones has been associated with Mr. Henry C. Meyer, Jr., New York City, as consulting

electrical engineer. Among the important electrical installations designed by Mr. Jones in this connection are those of the Chelsea Piers at New York; the United States Military Academy at West Point; the Prudential Insurance Company buildings at Newark, N. J.; the Equitable Building, New York; J. P. Morgan & Company's building, New York; the Hotel Statler, Detroit, Mich.; the Soldiers' Memorial Building, Pittsburgh, Pa., and the Lord & Taylor store, New York. Especially interesting has been Mr. Jones' work in designing and constructing the special stage-lighting equipment for "Peter Pan" as recently played by Miss Maude Adams. As stage manager for the Society of École des Beaux Arts Architects, Mr. Jones produced the lighting effects for the latter's "Venetian Spectacle and Pageant" in 1913, "The Judgment of Paris," 1914, and "The Dispute of the Muses," 1915. Mr. Jones is a member of the A. I. E. E., the I. E. S., and the Illuminating Engineers' Society of London, England, and a fellow of the Royal Society of Architects, London.

It is with regret that we publish the following notice regarding Montfort HillSmith's death:

Montfort HillSmith died at Danbury, N. H., April 28, 1915. He was a native of Boston and was born in Mount Vernon street nearly thirty-nine years ago. Mr. HillSmith was the son of Frank HillSmith, an architect, who died fifteen years ago. He studied architecture at the Institute of Technology from which he was graduated but he did not follow his profession long before his health failed and it was found advisable to move to the country. Mr. HillSmith purchased a farm at Danbury which he had occupied for the past ten years. He is survived by his wife, who was Elsie Nordhof, daughter of the late editor of the Washington *Times;* two brothers, Clarence HillSmith of 88 Chestnut street, and Frank HillSmith of Dayton, O., and one sister, Miss Rosamond HillSmith of Jamaica Plain.

1900.

WILLIAM R. HURD, 2d. RICHARD WASTCOAT.
PERCY R. ZIEGLER.
INGERSOLL BOWDITCH, *Sec.*, 111 Devonshire Street, Boston, Mass.

This year the editor of the REVIEW has mapped out a system for the secretaries to follow in getting news for the class letter, and it will be very interesting to see how his plan works out. This number contains letters from men living outside the United States, and if all the classes have responded in the way 1900 has, class letters will be worth reading. Eight replies were received from fifteen letters sent, two of which were returned, as troubles in Mexico prevented their delivery.

The special feature of the January REVIEW will be letters from men who are doing voluntary work for states, municipalities and communities. As it will be very difficult to pick out such men it is hoped that those doing it will send in accounts of their own accord.

The April REVIEW will have reminiscences of student life and it is hoped that everybody who reads this will write down and

send in some incident occurring in his student days, which still comes to his mind on occasions, and brings back to him the pleasant and amusing memories of his Institute life. Nobody need feel that a good story will not be printed, as the editor has assured the secretary all the space he wants.

Canada has several 1900 men looking after her engineering interests and letters received give a very good account of the variety of work being done. Some of the letters give personal accounts concerning the great European war. Steve Brown writes as follows:

Since leaving Tech my work has been extremely diverse. In a nutshell, I graduated from the Institute as a mechanical engineer, and have since graduated from the "College of practical work" as a civil engineer (*i. e.*, the public thinks so, which is sufficient for one's everyday needs). As a matter of fact, I have, of course, forgotten most of my mechanical training and really added but little "Honest Injun" civil engineering. However, if one is able to hire really clever people to cover up his own vacuous shortcomings he is not apt to be found out, at least for some time.

In detail, my career has been somewhat as follows:

In the fall of 1900 "Sonny" Collier and I formed the august partnership of Collier & Brown, Consulting Engineers, of Atlanta, Ga. In this association we did reasonably well, but unfortunately for our combined career, Sonny got married and I wanted to, so, as we could not continue to live indefinitely in a dress-suit case, we decided to separate and see what we could do independently. As we all know, Sonny is now the veritable body and soul of the Hydro-Electric Octopus of the South. As for me, I am digging reasonably good tunnels in a reasonably satisfactory manner.

After leaving the South, in December, 1903, I suffered many vicissitudes, finally landing, early in 1904, as an inspector at Bridgeport, Conn., with the N. Y. N. H. & H. R. R. Co. In the summer of 1905 I went with the United Engineering & Contracting Company, of New York, as resident engineer on the Port Morris Depression of the N. Y. C. Ry. tracks, and the St. Mary's Park Tunnel. Later that fall I went to Porto Rico for the same company as a consultant to the city of San Juan. Early in 1906 I was made assistant engineer in the same company on the Pennsylvania Railroad Tunnels under Manhattan Island. Here I finally became principal assistant engineer, as well as general superintendent of all their work west of Fifth avenue.

Then I went to smash (in 1908) physically, and spent the best part of two years abroad, ostensibly on business for the U. E. & C. Co. Here I saw much very interesting work and got much information on tunneling, which later was to be vastly useful. About the end of 1909 I became chief engineer of the Tide-Water Building Company and T. B. Bryson on the construction of Section 11-A-3 of the Fourth avenue subway in Brooklyn, where I stayed till the spring of 1912, when I came to Montreal.

At present I am chief engineer of the Mount Royal Tunnel & Terminal Company, Limited, and managing engineer for McKenzie, Mann & Company, Limited, in Montreal. MacKenzie, Mann & Company, Limited, control not only the M. R. T. & T. Co., Ltd., but the Canadian Northern Railway, the new Transcontinental as well, for which the Montreal work is to form the main Eastern Terminus. The tunnel is something over three miles long (double-track), has various local and terminal stations, both freight and passenger, with yards, viaducts, etc. The total expenditure will represent about $15,000,000.00. As is natural in such a position, I also do a bit of consulting work, which has extended pretty much all over the world, although it doesn't make me rich by any manner of means.

I am a member of the following societies:

The Institution of Civil Engineers, England; American Society of Civil Engineers; The Canadian Society of Civil Engineers; American Society of Mechanical

Engineers; American Railway Engineering Association; Engineering Association of the South, etc. I am a member of the Council of the C. S. C. E. and chairman of the committee on Steam Shovel and Mechanical Excavation in the A. R. E. A.

In June, 1904, I married Miss Edith Luce, of Boston, and have two extremely satisfactory small boys, Stephen Luce B., and Orman Pearson B., aged five and two respectively.

Incidentally, in justification of our military training at Tech I must mention the fact that I am helping Lieutenant-Colonel Snyder in giving instruction to Canadian officers, going to the front, in military map making and engineering. The regular class averages about 60 officers.

W. S. Hart contributes the following concerning his connection with the Shawinigan Water & Power Company. He has also sent a reminiscence of undergraduate days which will be held for the April letter when it is hoped to publish a great many:

For a number of years I worked in Boston in various capacities, and finally in July, 1903, I was appointed accountant of the Shawinigan Water & Power Company in Montreal. At this time the company had just completed its first power development at Shawinigan and built a high tension transmission line to Montreal.

I have been secretary and am now treasurer of the company, which has increased its size a good many times since 1903.

The organization of the company and its subsidiaries is similar in most respects to various big electrical operating organizations of this continent. Its activities spread nearly over the Province of Quebec, the chief cities of which are Montreal, Three Rivers and Quebec.

The minor companies are made up of smaller electrical distributing companies, an electric freight railway, an electric passenger railway and two electro metal industries.

The interests which control the Shawinigan Company and subsidiaries also control the Consolidated Gas, Electric Light & Power Company and the Pennsylvania Water & Power Company of Baltimore, and the Cedar Rapids Manufacturing & Power Company which has recently completed its electrical development on the St. Lawrence River.

While at the Institute I set out to be a civil engineer. My nearest approach to engineering matters nowadays is when I criticize engineers' estimates and expense accounts.

Progress in the Province of Quebec in the last ten years has been very great. For the last year the Continental war has affected Canada very much. Large numbers of men have been withdrawn from the country, and it is now that we are commencing to feel it. We have on hand construction jobs of some magnitude and find it difficult to obtain a satisfactory supply of labor and engineers of any ability. A large number of engineers and college fellows have gone over in engineering corps.

There are about forty or fifty Institute men in Montreal, who meet together occasionally and swap experiences. We have a number of Institute men working for the different companies. They are all bright, able-bodied men, upholding the prestige of the Institution. I am married and have two boys.

It is hoped that Holmes received the contract he was after and will be rewarded for the trouble he took in sending the following news:

After leaving Tech I performed about as follows:

Draftsman in Steel Designing Department, Boston Elevated Railway; then checking and designing in Bridge Department, N. Y. C. & H. R. R. R.; New York; then structural engineer, United Coke & Gas Company, New York; then in January, 1902, designing steeple towers, bridge teamways and miscellaneous steel structures for the Link Belt Engineering Company, at Philadelphia, Pa.; 1903, until July,

1909, in charge of estimating and designing for the Dodge Coal Storage Company, Philadelphia, Pa., on miscellaneous structures of steel and reinforced concrete for the handling of ore, coal, etc.

July, 1909, to date, secretary and treasurer of MacKinnon Holmes & Company, Ltd., Sherbrooke, Quebec, engaged in the manufacture of steel bridges, buildings, penstocks, mine head frames and other miscellaneous structural steelworks, also forging 4.5 H. E. shells. Married 1902 and have three nice girls, to pick my pockets, ages 12, 10 and 3 years.

The following taken from Keay's letter brings hom to us more closely the great struggle which England and her allies are making to prevent Europe and possibly the United States from coming under the control of a dominating nation:

I am beginning my tenth year at McGill University and eighth year as head of the Department of Railways. Two years ago I was made an elective fellow on the corporation of the university. The railway work at McGill has been extremely interesting, the results have been worth while, and if we can manage to pull through the lean period of war times the course will continue successfully.

In addition to the college work, I have been busy during the last two years with a considerable amount of consulting engineering in connection with the paper industry, particularly with the design of pulp digesters and special equipment involved in the new power development of the Laurentide Company at Grand Mere, Que.

Our Technology Club of Lower Canada is still on the map, and we have had several very enjoyable gatherings.

Of course, the war has materially changed the complexion of things here. Our campus has become a military parade ground, and the sound of the drill sergeant is heard in the land. A number of my former students were killed at Ypres and Langemarck, and many more are now in the fighting line.

In closing, I would, however, like to take advantage of this opportunity to convey my best wishes to all the fellows of 1900, and to express the hope that we "foreigners" may be able to make a better showing at the next reunion than we have in the past.

Roberts' letter from Tasmania gives an insight into the care which is being taken to prevent news getting to the enemy, and also what is being done to improve the process of smelting.

The call for a hearing from those of the class in distant lands reached me a short time ago, after being side-tracked along the way, to give the censors time to investigate your letter. All mail, as you know, goes through the censors' hands with curious and weird results at times. In July of 1900 I left Boston, hard on the trail of a job with the B. & M. Reduction Work at Great Falls, Montana. On the way I saw in Cleveland and Chicago several 1900 Tech men and others and those were the last of 1900 men, with the exception of Snow and Hamilton, that I have seen outside of Boston since that memorable graduation day in 1900. I had the pleasure of meeting a few of the men at Mechanics Hall in June, 1913, among them your distant self.

Well, I landed the job and hung on through various progressive appointments until 1913 when an offer was made to me of the position of chief metallurgist at the Mount Lyell M. & R. Co., Ltd., in Queenstown, Tasmania, which I accepted and landed here in August, 1913. Tasmania is about 240 miles S. S.-E. of Melbourne, Vic., Australia. The above information is for those who know as much about the location as I did, when offered the job.

The work here is, and promises to continue, of a very interesting character. The plant consists of five blast furnaces and six converter stands, and stands unique in copper meteorology as being the "home of Pyntic Smelting" for it was at this little plant that Robert Sticht, general manager, developed the Pyntic method of treating sulphide copper ores; and brought it to perfection and "everybody's doing it now."

His son Robert, by the way, is entering Institute this year. It would be very much appreciated if some of the local men looked him up.

There are not many Tech men in this part of the country, or rather, world. Morse, who was manager at the Port Perie Smelting Works, N. S. W., left for the States several months ago. Matt Brodie, Australasian manager for the Sullivan Machinery Company of Chicago, paid a flying visit to Queenstown a while ago and we were able to "talk Tech" at each other. He was like an oasis in the desert.

Since leaving the Institute I have married and there are now two Techlets undergoing preliminary training. I am trying to scheme out some way to visit the U. S. A. next year, making Boston my headquarters and the time in June, where I hope to see many of the fellows of 1900 days. In the meantime my kindest regards to the committee.

When news from Fred Cooke appears in the class letter, it is always worth reading, and especially at this time when the Panama Canal is having difficulties with slides. This gives news first hand:

You speak of living outside of the United States; I have lived outside of the United States for a considerable part of the last ten years. Since I sailed from San Francisco for the Philippines in February, 1906, I have been in the United States only during 1909–10 and 11, and I was out of the country from November, 1910, to January, 1911, it having been my good fortune to accompany the Atlantic Fleet on its voyage to England and France. I saw quite a bit of English, German and French dock yards at that time, and returned to Washington via Guantanamo, Havana, and Key West, which was almost as interesting as Europe.

I have been on the Isthmus since January, 1912, and do not expect to return until about next June. Of course I have had several vacations and have made one business trip to the States during that time, having made four round trips in all. We do not consider ourselves very far out of the country down here, as we are only six days from New York or five from New Orleans, and the cables and radios work with regularity and volume—too much so at times. My work consists of getting out the general and detail working drawings for the construction of a large dry dock, two coaling plants and subsidiary structures, and I have also had considerable to do with the construction of the navy radio stations on the Isthmus, as well as some participation in the specifying and testing of two large floating cranes "made in Germany." An important part of my work has been the preparation of design drawings and specifications for the purchase of various materials, including the aforesaid floating cranes, the coal handling machinery, the dry dock pumping plant and operating valves, and miscellaneous lots of fabricated structural steelwork. The latest effort along these lines is the purchase of a large locomotive crane to prowl around the dry dock and pick up things at a long distance. It hardly seems possible that I have already put in almost four years on the foregoing objects, and one would think that I had done considerable loafing on the job, but on the contrary I appear to always have just a little more than enough work on hand, with the result that I have stuck to my office to such an extent that my visits to the rest of the Canal have been rather infrequent, though of course I have a fairly good general idea of it. At the moment of writing, the Culebra Cut is blocked again; the pressure of the material on each side of the Canal prism has again bulged up the Canal bottom, this time to such an extent that dry land was visible in places. It is dredge, dredge, dredge, all the time. Eventually, of course, the material will have reached a state of permanent equilibrium, but the difficulties now being encountered are powerful arguments against a sea level canal. The "Straits of Panama" will have to be reserved for posterity to accomplish, and I think the country is to be congratulated in having the Canal finished as it is.

The radio stations have been in operation for some time and the second floating crane has just been tested. These cranes are the most powerful ones outside of Europe, so far as I know. They can pick up 100 long tons at a distance of about 82 feet from their sides and can also pick up 250 long tons at a distance of 22 feet over the side. During the tests each successfully lifted 300 long tons. The coal-

ing plants are still in construction. The Panama Canal is building the substructures and foundations, which are quite extensive, and the coaling machinery proper is being executed under two contracts with firms in the States. The dry dock is also still under construction. So you see I can only "report progress" so far as the greater part of my work on the Isthmus is concerned.

I shall look forward with great interest to the November issue of the TECHNOLOGY REVIEW, and I hope that the other letters will be more interesting that I can make this one. An engineer should say more about his completed work than about work which is still in progress, and, as you see, I am only able to report progress.

Frank Dutton has returned to the United States and his account of his stay in Cuba follows:

I spent a very pleasant year in Cuba at the Mayari Mines of the Spanish American Company, being fully occupied with the management of the property and in particular some special work in connection with some improvements at the nodulizing plant. The climate and living conditions at Felton are very satisfactory, and on the whole my experience was delightful, although for permanent residence I think I prefer Pennsylvania or even New England. If any of my friends want to know about Cuba I will be glad to give them information as far as my knowledge extends, either as to the most annoying bugs or the easiest way of earning a living.

The class will be grieved to learn of the misfortune which has befallen Tweedy as his letter will show. The secretary has extended to him the sympathy of the class.

I am most sorry to advise you that on June 3, as myself and family were leaving Mazatlan, Mexico, to return here, we had an accident in which the carriage conveying my family plunged over an embankment, causing the death of my wife and serious injury to one of my little girls. I am glad to advise you that the little girl has entirely recovered. My wife was Mabel Atwood, a sister of George D. Atwood, 1901.

The following account of the accident is taken from the Los Angeles *Examiner* of June 8:

Mr. Tweedy, who maintains a home here and is in charge of the interests of the Bradbury Estate, of Los Angeles, in the Rosario Mines, near Mazatlan, had desired that his family eat the last possible meal at home and the *Prince Albert* was held for a time for them to board it. After the meal the carriages hurried to catch the boat.

Mrs. Tweedy, the two children and the governess were in one carriage, while Mr. Tweedy followed in another. The leading vehicle was in charge of a Mexican coachman, who, through carelessness or sleepiness, drove too near the edge of a bluff and the carriage and its occupants were dashed over and onto a bed of rocks fifty feet below.

Mrs. Tweedy, one child and the governess were killed outright and the other child seriously injured.

Announcement of the marriage in the City of Mexico, August 12, of Miss Amada Laura, youngest daughter of Senora Clara Mariscal de Moran, of Taeubaya, D. F., and Mr. Arthur Constantine, of Boston and Newburyport, has been received by Mr. Constantine's Boston friends. He was for several years on the staff of the *Herald*. The bride is a granddaughter of the late Ignacio Mariscal, the Mexican minister for many years to the United States and to England and the minister of foreign relations in the cabinet of Porfirio Diaz.—James H. Batcheller's temporary address

is Ravenswood Mine, U. S. Smelting Co. Reads, Jasper County, Missouri.—Arthur W. Geigers' new address is care of Abbott A. Hanks, 630 Sacramento street, San Francisco, California.

1901.

ROBERT L. WILLIAMS, *Sec.*, 70 Waban Hill Road, Chestnut Hill, Mass.

The secretary was informed that a special feature of the news from the classes this month would be letters from Institute men in foreign lands. Accordingly he looked over his card index, found a few names, wrote to them, but has not received a single reply from men abroad! The trouble must be due to one of two things, either the foreign war censors are too strict, or the men are too busy to write. '01 will not be able, therefore, to distinguish itself in this number of the REVIEW. The class news for January is to have for the leading feature an account of the work Technology men are doing for the state, municipality and community, more especially with reference to voluntary service. It also will include men in public service who are doing investigating or research work which will result directly in benefit to mankind. Let us hope we can make a better showing than we have this time. Write at once to the secretary if you come in the list.

F. G. Clapp writes:

Having returned to my native country, I no longer belong in the category of those "distant from the United States"; but I certainly have traveled abroad in a broad sense. It would be possible to write volumes on the hills, plains, antique walls and desert wastes of China, on the military roads of Transylvania, the bandit-infested wilds of Mexico, and on the vast stretches of Canada, which I have had the privilege of traveling extensively, from the ice-bound coasts of Labrador to the wilderness of northern Alberta and British Columbia. It is my desire some day to have a respite from business long enough to pen these volumes; but just at present I find myself still working strenously in the interest of certain corporations who demand a first mortgage of my time. Just now I find myself bound for the Osage Nation in northern Oklahoma, for a visit of some weeks.

The following is taken from a recent Boston newspaper:

Fanny Rice, the comedienne, light opera and vaudeville favorite, announced at her farm in Franklin, N. H., the engagement of her only daughter, Miss Edith Rice Purdy, to Eben Lord Chapman of Harrisburg, Pa., formerly of Franklin, a graduate of Massachusetts Institute of Technology, who recently inherited a fortune. Mr. Chapman is passing the summer at his boyhood home in Franklin. Fanny Rice's farm, the old Blanchard estate, is three miles from the town. The news is of particular interest to Boston where Mr. Chapman received his technical education and where the mother of his fiancée scored repeated successes on the stage. Fanny Rice and her daughter recently returned to this country from Australia. Miss Purdy has devoted herself to the study of art for several years.

W. E. Farnham has been appointed a member of the visiting committee to the Electrical Engineering Department of Brown University where he graduated in 1899.

One classmate writes:

H. P. McDonald, superintendent Snead Iron Works, Jersey City, is still the same weight as when he played guard on the M. I. T. foot-ball team—and he is married and has a large family!

W. F. Bleecker is located at Canonsburg, Pa., where he is chief technologist and head of research department for the Standard Chemical Company. His work consists in electric smelting of uranium and vanadium alloys, also hydro metallurgical processes for the extraction of radium, etc.—A. A. McInnes is chief engineer in charge of the construction of Section 9, of the Lexington Avenue subway, New York City. Amount of contract, $2,300,000.—Carlton R. Rose's address is now 651 Howard street, San Francisco, Calif.—D. F. Haley is superintendent of the Insterstate Callahan Mining Company, at Wallace, Idaho.—We quote from the *Electrical World* as follows:

J. C. Woodsome, the president-elect of the Southeastern Section of the National Electric Light Association, is the general manager of the Tampa Electric Company of Tampa, Fla. Like many other men in the Stone & Webster organization, Mr. Woodsome is a native of Boston and was graduated from the Massachusetts Institute of Technology. From 1901 to 1902 he served as assistant instructor at Tech and in the latter year entered the employ of the Stone & Webster company. In January, 1906, he was appointed superintendent of the Houghton County Electric Light Company at Houghton, Mich., and in August 1908, he was promoted to be superintendent of the Dallas Electric Light & Power Company at Dallas, Tex. Since May, 1911, Mr. Woodsome has held his present position of general manager of the Tampa Electric Company. He is a director of the Tampa Rotary Club and the Tampa Board of Trade and holds membership in a number of national engineering societies.

1902.

F. H. Hunter, *Sec.*, 281 Park Street, West Roxbury, Mass.
J. Albert Robinson, *Asst. Sec.*, care Underwriters' Bureau of New England, 141 Milk Street, Boston, Mass.

When the genial editor of the Review informed the class secretary some months since that the November issue was to be particularly devoted to Tech men in foreign lands, we got busy forthwith and wrote to every '02 man outside of United States and Canada, asking particularly for information that would be of interest for this issue. From the scarcity of returns received, the secretary is forced to the conclusion either that most of his foreign addresses are obsolete or that things are so strenuous in other countries that classmates who are far away have not had time to write of their doings.

The next issue of the Review is to lay special stress on the work being done by Tech men for the public good, and classmates who are working in municipal or government work or advisory work for any commissions or boards are especially requested to advise us regarding it.

The spring number of the REVIEW is to contain a lot of reminiscences of "When I was at the Stute," which will be particularly appropriate, as next spring will see the last days of the Institute in its old home, and will make an enjoyable reminder of the days of yore, which ought to arouse a yearning in many hearts to take in the big celebration in June.

Matthies writes from Bergen, Norway, under date of August 27, regarding his adventures in getting out of Antwerp before the siege, from which we quote as follows:

Please do not blame me for the tardiness of this reply. Your letter followed me through Norway and Sweden, was returned to England, and finally reached me in New York, early in August, just as I was about to return to Europe.

When the war broke out, my family and I were living in Antwerp. Naturally we experienced the real war excitement, but this did not become acute until Belgium was actually invaded. All at once paper money dropped in value and the people with silver coin (Belgium had no gold coinage) held on to it. Many stores sold out their entire stock of edibles in one day, others opened only for a few hours each day and then with a guard at the door who allowed none but known customers to enter. About this time Antwerp began to take on a real war aspect, the avenues and boulevards were lined with soldiers and war equipment. The active reservists were called to the colors and bugles sounded everywhere. At the various banks and consular offices the crowds and the excitement were especially great. Conflicting reports from the front were circulated, and the town was placarded with notices by the Burgomaster counciling the population to remain quiet.

My cue that it was time to clear out, and I can vouch for a number of Americans taking the same cue, came when my stenographer, a British subject, informed me that the British Consul had advised all British subjects to leave Antwerp at once. With another Tech man—I am sorry not to know his class, but his name is Pennock—I went to the Antwerp-Harwich steamship ticket office and reserved the last four unoccupied staterooms on the boat scheduled to sail that afternoon. Returning to our offices we found that many Americans wished to leave with their families on this boat. By careful planning, and with strict regard to sardine canning methods, we concluded that these staterooms would accommodate the ladies and children. The men were to sleep on deck. We were further lucky to find what we believe to be the last taxicab that had not been commandeered by the military authorities. We stuck to this cab (leaving it without a fare for only a short time would mean that it would be commandeered) and by repeated trips succeeded in transporting a number of families to the wharf. So far we took it as a lark; we all expected to return to our homes in a month or six weeks. As a matter of fact we never succeeded in leaving our homes at all that day. When we were assembled at the pier the boat was already crowded and no more were allowed on board. At the same time it was asserted that this would be the last boat to leave Antwerp.

It was then discovered that the British Consul had procured the Canadian & Pacific steamer *Montrose* to take the British subjects, as war refugees, from Antwerp to London. The courtesy of traveling on this refugee ship was also extended to the Americans and we were indeed glad of the opportunity. Tickets were handed out—real steerage tickets—and we were told that there would be no passenger accommodations on this ship and that the trip would take approximately 17 hours instead of the usual 8 hours. In explanation of what was meant by "no passenger accommodations" we were told to bring our own bedding and food, also that there would be neither time nor room for baggage other than hand baggage. Personally I'd rather lug a trunk and call it hand baggage than to lug bedding for five persons, so I took a chance and brought a steamer trunk, figuring that 17 hours could include only one night. We were aboard at 6 a. m. next day but it was nearly 10 a. m. before we left our anchorage. All the way down the Scheldt we were stopped at the various fortresses, both Belgian and Dutch, by the boom

of cannon. Each time the officer in charge let us pass. We must have looked a great deal better than we felt.

I will not tire you with the details of the trip, let it suffice to tell you that we spent nearly 60 hours on the good ship *Montrose* instead of the promised 17 hours. Those of us that slept at all did so on deck, we made up our bunks under life boats and in sheltered corners. Lunch or luncheons prepared for a 17 hours' trip are not to be calculated to last for 60 hours, consequently some of us did not eat very regularly toward the last of the trip. Some time during our second night we were met by a British torpedo boat and convoyed into the Thames. At the dock we were met by friends who had heard of our flight. Our party was split up and taken to various homes; here we were properly fed and allowed the luxury of a wash.

About two months after we arrived in England I sent my family to the States and soon after left England myself for Scandinavia. In May of this year I left for the States on a visit, and as stated above, have only just returned.

Our house in Antwerp was damaged during the bombardment, all the windows were smashed and a portion of the roof wrecked. Our possessions have been removed from this house, though the furniture is still in Antwerp, the smaller, more portable, portions of our household goods, such as rugs, china and glass-ware, have been sent to Holland and stored there. I will be very glad when this war is over and I can collect my belongings and can start a home again somewhere. Something—not a little biassed by my desires—tells me that this home will be in the good old U. S. A. I have spent the greater part of ten years in Europe, living in various countries, but the climax has been entirely too international. At present I am in Norway, my family is still in America, my furniture is in Belgium, and my portable effects are in Holland.

The members of the class will be very glad if Matthies' prognostication of his future home proves to be correct.

Charles R. Cross, Jr., son of our well known professor, who was a special student during our freshman year, met his death in France on October 8, as a result of an accident to a motor car he was driving. The following from the Boston *Herald* of October 10 gives all the details we have so far been able to learn:

Charles R. Cross, Jr., of Brookline, Mass., son of Professor Charles R. Cross of the Massachusetts Institute of Technology, who suffered a broken back as a result of an automobile accident near Dinard, October 6, died yesterday in the military hospital at Dinard.

Russell Greeley of Boston, whose hip was broken in the same accident, is still in the Dinard hospital, and the doctors say he is making favorable progress.

Mr. Cross until recently had been serving under Dr. Richard P. Strong in the Serbian Red Cross work. He came to Paris with Greeley, who is a portrait painter living in Paris, and entered the relief work conducted by Mrs. Robert Bliss, wife of the first secretary of the United States embassy. They were taking supplies by automobile to military hospital No. 64 at Dinard when a sheep dog ran across the road and in trying to avoid the dog the car was overturned. Cross and Greeley, who were alone in the machine, were pinned under it. They were imprisoned more than an hour when chance passers found them. Both were unconscious. They were taken to the hospital to which they had been carrying supplies and were put under care of military surgeons.

While Mr. Cross's acquaintance among the members of the class was not extensive, those who do remember him will be pained to learn of his sudden death and the sympathy of all the classmates will be extended to his father in the loss of his only son.

After his year at Tech, Cross entered Harvard, from which he was graduated in '03 and followed this with a course at the Harvard

Law School, taking his degree in '06, since which time he had practised law in Boston up till the first of the present year, when his strong interest in the cause of the Allies caused him to volunteer for relief work. He was for a time in Dunkirk, then in Paris before going to Serbia with the expedition under Doctor Strong referred to above. Cross was an active sportsman and had taken exploring and hunting trips in Alaska and British Columbia, on some of which Charles Mixter had been his companion.

The most distant man of '02, Matt Brodie, probably never received the secretary's letter, as he has been on a trip to this country. He made a brief visit to Borden in Framingham, and the two spent a few minutes at the home of Walter Fitch while in that town. We understand that he has returned to his work in Sydney, where he is manager for the Sullivan Machinery Company. —Capt. John W. Wadleigh of the U. S. Marine Corp, who has been one of the classmates in foreign lands, has just returned from his tour of duty in the Philippines, and is now stationed at the Marine Barracks, Annapolis, wondering, as he puts it, "where he will be sent next."—Pendergast has been heard from briefly, writing from Nara, Japan, in April, where he had been on a trip with the Secretary of the Interior of the Philippines. Pende reported that he had hardly seen Manila as, almost as soon as he arrived there, he went off for an extended trip through the Archipelago, visiting most of the islands, but has not yet met our old friend the Sultan of Sulu. We hope to hear more from Pende soon.—Another '02 man, who has been at a distance, is Charlie Smith, who was managing a mine in the Caucausus at the time the war broke out, and had a difficult time getting out of the international squabble. On getting to Europe he pitched into the Belgian relief work and has only recently returned to this country. We understand that he is at his home in Oconto, Wisconsin, but the news has reached us too recently to get in touch with him at this writing.—Donald Belcher was married on October 9 to Miss Caroline Elizabeth Edgett of Winchester. The ceremony was performed in the Church of the Epiphany, Winchester, by the Rev. John W. Suter, the former rector of the church. The ceremony was followed by an informal reception in the parish house, and Mr. and Mrs. Belcher, after a wedding trip, will take up their residence at the Winchester Chambers, where they will be at home after the first of January. Mrs. Belcher is an enthusiastic golf player and has been lady champion of Winchester for several years and, as we know, Don Belcher is some golfer himself, when he can spare time from his duties as general manager of the Coffin Valve Company at Neponset.—Kingsbury was elected president of the Technology Club of the Mohawk Valley last spring. He reports the birth of a son, Robert Jackson, on July 21, so is open to congratulations on more than one count.—Walter Fitch attended the annual convention of the Illuminating Engineer-

ing Society in Washington the latter part of September. He reports that Durgin read a paper on "Semi-Direct Office Lighting in the Chicago Edison Building." Fitch had lunch with Mayo while in Washington and reports the latter as well but busy, and that the cares of providing for his family, which includes three girls and one boy, are showing signs in the form of a few gray hairs around the edges. Well, Mayo has some company in this.—We hear that Currey is recovering from a siege of typhoid fever. Classmates will be glad to know that Pete is now on the mend, and trust he will soon be his old self again.—Lockett reports from Chicago the formation of two batteries of Light Artillery, composed largely of college men, for the National Guard, containing about half a dozen Tech men, of which he is the oldest member. He is serving a second term as president of the Northwestern Alumni Association, and tells of a week-end auto trip which the association took to a lake-shore resort north of Chicago.—Place reports the birth of a daughter, Anne Richmond, who arrived in July of the present year.—Jason Mixter read a paper before the N. H. Surgical Society and the Dartmouth Medical Alumni at their joint meeting in Hanover early this month. The paper described his experiences as a surgeon not far from the battle line in France during the three months he spent there last spring.

1903.

MYRON H. CLARK, *Sec.*, 1790 Broadway, New York, N. Y.
RALPH H. NUTTER, *Asst. Sec.*, Box 272, Lynn, Mass.

Sam G. Porter sends an interesting account of his irrigation work in Calgary, Alberta, Canada:

I have been engaged in irrigation work the major portion of the time since I left Tech in '03. For two and a half years I was with the United States Reclamation Service; for six and a half years I was chief engineer of the Arkansas Valley Sugar Beet and Irrigated Land Company, Holly, Colorado, having spent one year on railroad work in the meantime. In June, 1913, I accepted an engagement under the commissioner of irrigation of the Department of the Interior of the Dominion of Canada, as inspecting engineer on the large irrigation works of Western Canada.

Some of the largest irrigation works in the world are located in Alberta. They are not constructed by the Canadian government but the government exercises a careful supervision over their design, construction and operation and makes very careful investigations of the water supply and all other fundamental features before issuing a water license.

The oldest irrigation system of any size in Canada is the Alberta Railway and Irrigation System in Southern Alberta. It has been in operation since 1898 and irrigates about 100,000 acres. It is capable of considerable enlargement and extension and will no doubt cover four times that area some day. Most of the water supply for the extended system will come from streams whose drainage area is partly in Canada and partly in the United States and the division of the water will be determined by the terms of the International Waterways Treaty, the interpretation of some details of which is now being arbitrated by Canada and the United States.

The largest system in Canada and perhaps on the continent, is the Canadian Pacific Railway Company's system just west of Calgary. It is divided into three

sections, the Western, the Central and the Eastern. The water supply is taken from the Bow River, the part for the Western Section being diverted at Calgary. The Central Section can be covered by an extension of the Western Section Canals. Its development has been abandoned for the present however. Water for the Eastern Section is diverted from the river near Bassano.

The entire irrigation block comprises an area of three million acres, approximately one third of which is capable of irrigation if the Central Section is included. The Western and Eastern Sections are constructed and in operation and cover an irrigable area of nearly 700,000 acres. There are some very interesting engineering features on this system, a few of which will be mentioned briefly.

(1) The diversion dam for the Western Section. This dam is located within the city limits of Calgary. It was necessary to provide that the flood water line would not be raised to such an extent as to endanger life and property in the city of Calgary by the construction of the dam. It was, therefore, built of the movable type in three sections.

(a) A sector section based on the design of those in use on the Chicago Drainage Canal. It consists of a steel sector, hinged on a concrete base which when lowered into its pit leaves a clear opening 152 feet wide on river bed grade.

(b) A stop-log section consisting of 23 openings each 20 feet in the clear. The logs are 12 by 18 inches by 22 feet and are handled by an electric crane, which operates on a track above the dam.

(c) An earth breeching section at the south end of the stop-log section, which may be cut in an emergency.

(2) The diversion dam for the Eastern Section. The spillway is a reinforced concrete dam of the Ambursen type. It is 40 feet high and above its crest are 24 sluice gates, each 27 feet in the clear, which are capable of raising the water an additional 11 feet. They are equipped with Stoney gates, electrically operated by power generated within the dam. The concrete dam is 720 feet in length. It is built on a clay foundation. An earth dam 7200 feet long joins the concrete dam on the west.

(3) The Brooks Aqueduct consists of a trestle carrying a suspended shell, both built of reinforced concrete. The novel feature is the curve adopted for the shell. It is a hydrostatic catenary, whose properties are such that under full load the tension in the shell is uniform throughout, and there is neither moment nor shear at any point. The aqueduct has a carrying capacity of 900 cubic feet per second, is two miles long and at its maximum height is 64 feet from foundation to top of girders.

The Southern Alberta Land Company's system is another large project in Alberta, which will irrigate 200,000 acres. It is nearing completion but owing to financial difficulties has suspended construction for the time being.

There are other features of engineering interest in connection with my work but I have already written more than I should. Since, however, this is my first offense, perhaps I may be forgiven.

At the beginning of the present year I was made assistant chief engineer of the Irrigation Branch, Department of the Interior, which is my present title.

—Regestein and Sammet, when in New York the past month, stopped in and spent a very enjoyable half hour with the secretary. —Richardson has been at Plattsburg, and sent a postal card showing several of the Tech men in uniform.

It is hoped that we may have a few '03 dinners in New York this winter so that more of us may get together.—Lawrence H. Underwood, late with the Indiana Steel Company at Gary, has been appointed superintendent of the by-product coke plant of the Youngstown Sheet and Tube Company at Youngstown, Ohio.

1904.

HENRY W. STEVENS, *Sec.*, 39 Boylston Street, Boston, Mass.
AMASA M. HOLCOMBE, *Asst. Sec.*, 510 Pine Street, St. Louis, Mo.

The unexpected has happened at last, and the secretary sits down to compile some class notes which he has not been obliged to dig up by main strength, single-handed and alone.

As the editor of the REVIEW requested that special attention be given in this issue to news from our "Foreign Legion," the secretary selected the names of all our members located beyond the confines of the North American continent, and the assistant secretary wrote to each, requesting that they send us some account of their lives in far distant climes.

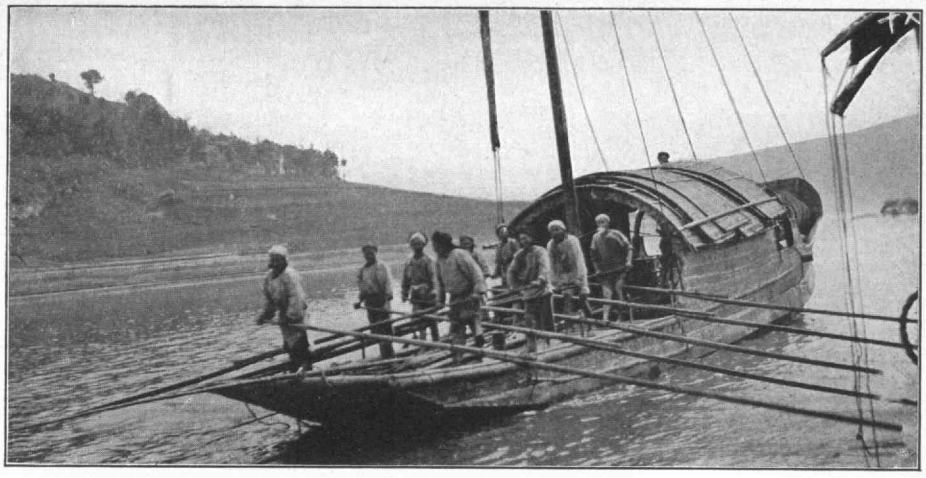
H. K. Richardson was the only one of the six who responded, so that the secretary is forced to conclude that the other five letters were "submarined" or failed to reach their destination from some other causes.

As will be noted from Richardson's letter, Ike Litchfield evidently places little faith in the efforts of our secretary at least, for Ike went gunning for foreign news himself. However, the secretary has no hard feelings over the matter, and hereby publicly offers thanks for the efforts of the editor-in-chief.

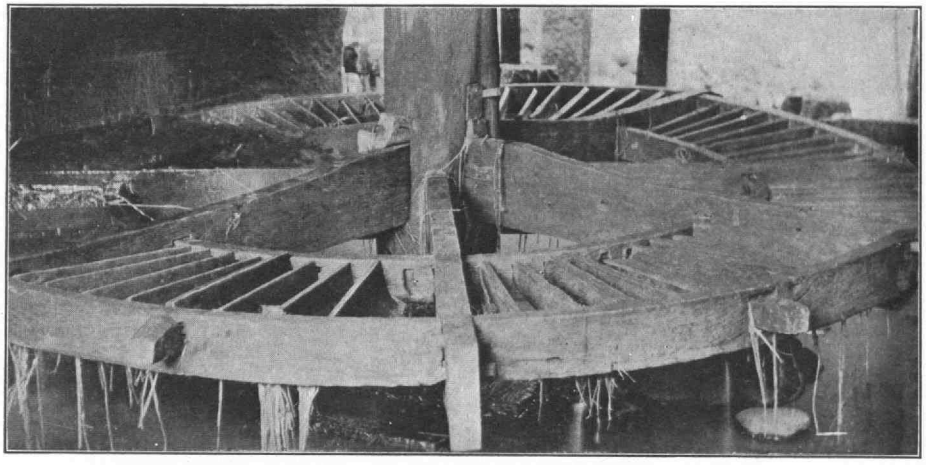
Here is the letter which Litchfield received from Richardson, who is located at Kwan Hsien Hills, Szechuen (sneeze it, if you cannot pronounce it), China:

As Mr. Litchfield has asked me for a little note to put into the November REVIEW, I thought you might be interested in the situation of the Tech man farthest from Boston. You see we are just half way around the world from Watertown, N. Y., so if I went any farther away I should be coming nearer. A watch set to sun time in Baltimore, Md., is only two minutes out when it reaches here. In respect to travel it takes at least 70 days from Boston to here, with a gradual reduction in the scale of travel. First Pullmans, then Pacific steamer, then fine large river steamer, then small river steamer, then Chinese houseboat of pattern of A. D. 1, then over land 10 days in a sedan chair stopping at Chinese inns every night. The inn keepers are exorbitant in their prices, for we paid 4 cents gold for the best room in the hotel each night, with a bowl of rice thrown in for the morning meal. For this munificent sum you are given the choice room of the lot, that next to the pig pen, or over the privy. You furnish your own bed and bedding as a matter of precaution against infection, for your sleep is likely to be troubled by rats and small creepers of all kinds. I never have found such a vicious animal as a Chinese flea, and your usual company at a Chinese inn is about 1,000,000 of these.

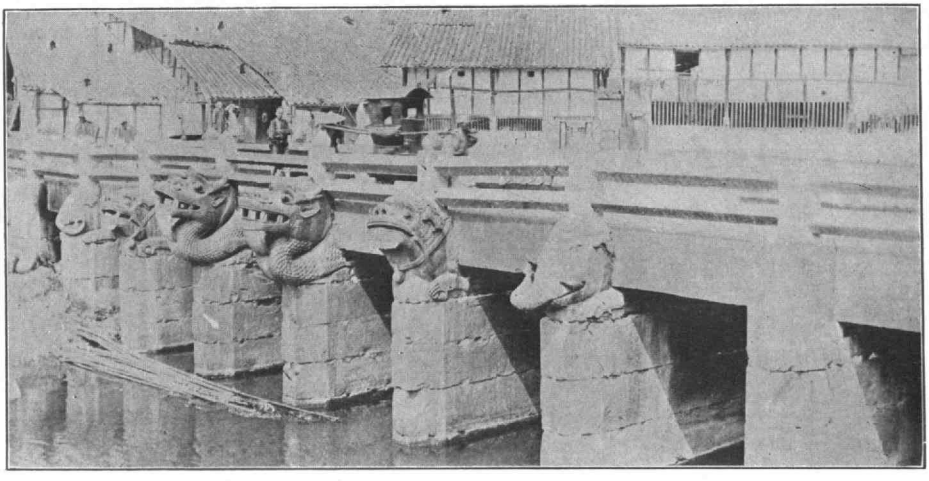
Here in the city we are in the midst of the richest part of China, the Chengtu Plain. The people here are considered the most progressive of the Chinese unaffected by the foreigners. We have electric lights in part of the city, and a modern mint, arsenal and powder mill, otherwise it is the same city as it was 100 years ago. I have not seen a carriage, auto, street car, train of cars, or anything modern except the electric light and mint machinery for three years. If I should be dropped into Boston from an aeroplane I am afraid I would be a big rube. By the way, the silver machinery at the mints is "Made in U. S. A.," Ferrachute, Wilmington, Del., and there is a drill press from Prentiss Brothers, Worcester, Mass., in the repair shop; all the rest of the machinery is English, except the powder mill which is German. The plant serving electricity to the city is one of the usual English-German com-



Our correspondent travelled 425 miles on the Yangstze in a boat like this. It makes about one mile an hour against the tide



Very old turbine wheel. Curved blades and periphery are unusual. Used for irrigation purposes, running grinders, hullers and oil mills



Bridge on the road from Chungkung to Chengtan entirely built of solid stone, a beautiful example of bridge building 1000 A. D. The sedan chair on the bridge is carrying Mr. Richardson's daughter

binations of an English boiler and steam engine (high speed) with a German dynamo and electrical apparatus.

The city of Chengtu is according to the Chinese the finest Chinese city in China, its streets are broad (40 feet), well-kept and cleaner than any other Chinese city I have ever seen. We have a population of about 600,000 or more, it is the capital and seat of government of the richest province of China, and center of the silk manufacturing of the West. Speaking of industries, one cannot but marvel at the state of their development. It is hard to believe that the looms, carpenter tools, river boats, forges, etc., are made on the same pattern that they were in B. C. 1000. The marvelous ingenuity displayed at that early age makes one ask the question, "Why did the development stop there?" I am enclosing several photographs that will show the development reached years ago and how it has been held in an arrested state ever since.

An efficiency expert doesn't need his stop watch out here, for nothing less than an hour counts with the workman. This is not so bad when you think of paying the high wage rate of $0.005 per hour or $1.60 gold per month of 30 days, sunrise to sunset. But you get just your money's worth and no more, for it takes about 10 Chinese to do the work of one man at home. Between the low cost of labor and reduced cost of materials, work can be accomplished here at half the usual price of the same job at home. The greatest trouble is the lack of responsibility of the workmen and any gang boss you may hire. *Ming Tien* (tomorrow) is the usual answer to your request to get a job done in short time. Then work is done *Chop A Do*—about right—is the best translation for this phrase. It is a strange thing, but the Chinese language has no word for accurate, you have to go a long way round and explain what you mean. This inaccuracy in the work about drives one wild. No matter how carefully you have trained your men they will put out rough work if they think they can put it over on you. Not that they cannot do fine, accurate work; some of the finest joinery and carpenter work that I have seen has been done by Chinese workmen, and everything taken from the rough log at that, for there are no sawmills here.

At home it is bad enough to keep track of materials and supplies, but at least you have one to trust to keep the check system going; not so here. The one you set to keep the check system takes it as a perquisite to work the system for his personal benefit, and milks it for all it will stand. The worst part of the matter is that this idea of "squeeze" is so ingrained into Chinese character that you discharge one man only to hire another who will do the same. There is no escape from it, so the only thing to do is to charge off 10 to 25 per cent. to cover the expense. Raising the wages only makes matters worse, for there seems to be a system in vogue that a man can squeeze a certain percentage of his salary and it will not be called stealing, above that is taboo; 15 per cent seems to be the limit.

There are some odd practices in buying that cause us annoyances. First there is no fixed price and everything is the subject of a barter or haggling. Then it costs more per piece to buy in large lots than in small. This was forced on my mind by a lumber deal. I was out buying lumber and could not get the merchant to give a better price than $0.88 per cubic foot; now $0.58 is a fair price and I told the man so. He then asked me how much I wished to buy; I said several logs ultimately but at least one just now. Then he said I could have one log for my price, but if I wanted more, must pay his price. I would have taken his whole stock and given him cash, much to his advantage, but no, the custom is to charge that way and no other way would do. This applies to others as well as to lumber men. The apparent way the merchant's mind runs is, "Well, if he has money enough to buy that much stuff, why he can pay more for it," and then again there is no fixed price, so that the sale of a large lot would sort of fix a customary price for that material, and the seller could not catch an unwary buyer, for big deals are noised about in a wonderful way, while the sale on one piece does not matter. Many times it is cheaper for us to have a Chinese buy for us, even with his squeeze, for a Chinaman can out-Jew a Jew, and the dice are loaded against a foreigner. A Chinese who understands you is a tremendously valuable asset in all one's work here.

I am sorry that I cannot send you a picture of the Chengtu Alumni Association but all my personal pictures are out of print. I have had an invitation from the

Shanghai Association to visit them; they are even so kind as to have their luncheon at the time I will be in the city. As yet I have not found the spare three months for the 3,600 mile round trip. Then again the $400 needed doesn't grow on every bush. Few realize that we are only about 100 miles from the Tibet border. On clear mornings we can see the 20,000 foot snow peaks of inner Tibet. Just now we are spending the summer in the foothills of these mountains, and we are only 27 miles as the crow flies from Chengtu.

What I have said about conditions here applies only to this inner part of China, that has been only slightly influenced by foreigners. The Szechuenese are probably the most progressive of the Chinese and have much to their credit. The irrigation system of the Chengtu Plain, completed 200 B. C., is a monument to any engineer and one of the seven wonders of the world. This waters a territory 50 by 70 miles and since it has been placed in operation there has never been famine or a serious lean year on the plain. The plain has about 5,000,000 inhabitants. Besides, it furnishes the rice for most of the mountaineers living in the mountains on the edge of the plain.

My work out here is to establish a trade school in connection with the local Chinese Young Men's Christian Association. The preliminary work has been done, we have found that the Chinese will take kindly to the work, and the plans for the first building have been made. There is much enthusiasm from the Chinese here for the project. However, the European war cut us off from expected support. The resulting financial trouble, together with the depreciation of the money in this province, has badly embarrassed us. We have carried a class of ten through a year and a half of work, and they will be graduated in September, as the first and perhaps the last class. Again the jealousy of the European governments against a trade school under the control of an American technical graduate has resulted in such outlandish slanders on the Young Men's Christian Association work in China that it may be that we shall have to abandon the work to save embarrassing the religious and social work of the regular associations. The need for such a school and the opportunities before it are tremendous, and it is a shame that the selfishness of politics steps in and hinders the work so. But selfishness is blind and unreasoning, so we may have to temporarily suspend the work until a more altruistic spirit takes hold of the traders of Europe. They are blind to their own good, for our work would have created a large volume of business and they would have been benefited more than American manufacturers, for they have the better selling organization right here on the field.

I am tremendously interested in the new buildings of the "New Tech" and hope to see them in about two years, as I am due to return at about that time. I have the REVIEW regularly, so keep up a little with things. It, however, reaches me rather late—I have just been reading the April REVIEW which arrived about August 1.

To the letter from the assistant secretary, Richardson sent the following reply:

Yours of June 29 is over a month behind Ike Litchfield's request of May. I have already exhausted my English department training on him and yet find I have failed to answer most of your questions. I sent him a bunch of photos and some literature, but will hand out a little more to you.

Yes, sir, the climate is fine, temperature range from 30° in January to 95° F. in August. It is delightful and there is no kick coming. American neutrality out here is such a weighty subject that it has not succeeded in landing very much information into this spot on the borders of Tibet. Chinese never discuss it, Europeans here take it as a matter of course. My wife likes the country quite well and so do the two youngsters, they talk more Chinese than their parents and understand it better. We only have a very few white men within the two days jinricksha journey that you set as the limit of my horizon. You see we only have a few rickshas that Noah used to transport the bears and deers from the ark to safety, and the police will only allow these to be used in the Manchu City where the wide (30 ft.) streets will allow two to pass. Otherwise we use shanks' mare and sedan chairs, and a

few use horses and wheels but usually abandon these after a year or two. We can thus visit all the 130 white people in the city by means of a 45 minute ride in chair, while a two-days' trip will bring some 200 white folks into our fold. You see on this Chengtu plain 50 x 70 miles there are only 5–6,000,000 people and some 27 odd walled cities each of over 10,000 inhabitants, so you see we have no reasons to be lonesome with 150 to the square mile.

Sure, I read all the 1904 news in the last REVIEW (April) but it did not require any time and I did not find out anything. I will be glad to see more next time. Publish a class book even if it does require that I dig up 8,112 cash to pay for the same=2 plunks real money although some that we are using was minted in Christ's time and most of it is 200 years old.

Well, Holcombe, you are the only man except Mailey that I have heard from since I left Guy Palmer at Chicago in October, 1912, so I have no news from classmates to pass on. Out in this sheltered nook in the world we hear little even of the war, so we are glad to get any news we can.

Having chronicled the results of our quest for foreign news, we will now turn to affairs at home.

The following newspaper clippings relate the natural culmination of two engagements announced in the July issue of the REVIEW.—From the Boston *Transcript* of June 30, 1915:

Professor Carle R. Hayward of the Massachusetts Institute of Technology, and Miss Mary C. Murray, daughter of Mrs. Elizabeth Murray of 83 Arthur street, Quincy, were married last evening. The ceremony was performed at the home of the bride's mother by Rev. Edward Norton, pastor emeritus of the Bethany Congregational Church. There were no attendants. Miss Murray has been teaching in the Washington School, Quincy. Professor and Mrs. Hayward left on a trip that will include the Panama Exposition.

That there was solid foundation for the rumors concerning Charlie Haynes, which were heard at the last "Pops," is evidenced by the following clipping describing the wedding which took place in Boston on July 21, 1915:

Miss Annette Austin of Galveston, Tex., was married at high noon today to Charles R. Haynes, son of Mr. and Mrs. Frederick Haynes of 66 Beacon street, Hyde Park. The ceremony took place at Christ Church, Salem street, the Rev. William H. Dewart officiating. Prof. Winthrop P. Haynes, an instructor at Wellesley, and brother of the bridgeroom, was the only attendant. The bridegroom is a graduate of the Massachusetts Institute of Technology, class of 1904, and is a civil engineer. The couple will reside at Naugatuck, Conn.

Miss Austin is a daughter of the late Judge William Tennant Austin and Mrs. Bettie Crofton Austin, of Galveston, Tex. Her father was the first president of the Galveston City Commission government, which brought order out of chaos after the storm, nearly a decade and a half ago. After her graduation from Cornell Miss Austin engaged in magazine work in New York. She has just returned from Cleveland, Ohio, where she compiled and edited a scientific work for Dr. George W. Crile.

Mr. Haynes is a graduate of the Massachusetts Institute of Technology, where he received the degree of chemical engineer in 1904. He was on the varsity track team, and since his graduation has won many amateur golf and tennis trophies in Boston and Cleveland. He is also widely known in musical circles in both cities as a pianist.

The following item is taken from the New Haven *Chronicle* of October 9:

Miss Evelyn Frances Pine, daughter of Dr. Samuel Pine of Baltimore, Md., and Perrie Morgan Arnold of Roanoke, Va., son of Mrs. Smith C. Arnold of Farmington

avenue, West Hartford, were married Monday morning at eleven o'clock. Mr. and Mrs. Arnold left for an automobile trip through New England, after which they will live in Roanoke, Va. Mr. Arnold was graduated from the Hartford High school in 1900 and from the Massachusetts Institute of Technology at Boston in 1904. He is now treasurer of the Evarts Machine Company, of which Mr. Evarts, who was the best man, is president.

We have also the following announcements:

Dr. and Mrs. James William Burns announce the marriage of their daughter, Imogene Alice, to Mr. Freeman Nelson Bull, on Wednesday, June the twenty-third, nineteen hundred and fifteen, Joplin, Missouri.

Bull's address is 310 Wall street, Joplin, Missouri.

Mr. and Mrs. Von Clure Gay announce the marriage of their daughter, Lauretta May, to Mr. Rufus Cook Reed, on Tuesday, June the twenty-fourth, nineteen hundred and fifteen. Charlottetown, Prince Edward Island, Canada.

Moses Brown, Jr., who returned from Mexico two years ago suffering from eye trouble, has been able to resume work and is now in the zinc fields of Wisconsin; his address being 601 West Main Street, Platteville, Wisconsin.—F. W. Horton is doing some very interesting work with the United States Bureau of Mines at Denver, in connection with the radium plant which the government has in operation there. Horton has one child to his credit.

The secretary also received an announcement of the marriage, on August twelfth, of Oscar Thurlow to Miss Mary Brown, at Saint Paul's Church, Newburyport, Mass. They will be at home at Florence, Alabama, after October first.—Cards were received announcing the birth of Phillis Maya, daughter of Mr. and Mrs. Paul M. Paine, and Chester Mason, son of Mr. and Mrs. Harry S. Kendall. From Mert Emerson, the secretary learned of the arrival, on August first, of Marianne Wentworth, at the home of "Reggie" and Mrs. Wentworth, at Montclair, New Jersey. Mert added that "Baby's two brothers are delighted with their sister."

For the January number of the Review, the editor is planning to make a specialty of the services that Tech men are rendering, without compensation, to the state, municipality or the community. This is a matter on which the secretary has no information regarding the activities of our class members. Should there be any of us who are rendering such services, the secretary earnestly requests that they communicate with him or with the assistant secretary, so that we may have it in the coming issue.

The time is approaching when we must begin to formulate plans for our reunion to be held next spring. This will be our tenth reunion which has now been twice postponed, on account of the All-Technology reunion, to be held in conjunction with the opening of the new buildings.

The secretary desires to obtain from the members of the class, their ideas regarding our reunion, as to length and character. As

he has repeatedly asked for letters and news through these columns, he has little faith that these words will bring forth much help, but makes the request nevertheless.

It is customary for each class to publish what is called the "Ten Year Book." Our ten year book has not yet been born, or much more than thought about. These books generally contain statistics regarding the progress of the class members, and to compile these, of course, requires that each member shall send in information. It is the intention of the secretary to send out a general communication to the class, requesting the ideas of each member regarding the coming reunion, the "Ten Year Book," and also to "touch" upon the financial condition of the class. If the appeal for news and ideas, expressed in the columns of the REVIEW, does not stir the minds of the class to action, the secretary hopes that it may at least serve to put them in a receptive mood for the general communication mentioned.

1905.

GROSVENOR D'W. MARCY, *Sec.*, 246 Summer Street, Boston.
CHARLES W. HAWKES, *Asst. Sec.*, 23 Saxon Road, Newton Highlands, Mass.

Although we had planned to make this issue of the REVIEW especially rich in news from men who are far away, comparatively few of the fellows who are located in the Far West and on the other side of the Pond have sent us any news. The secretary wrote to a good many asking for a special effort and we will probably have several interesting letters next time which will arrive after this issue has gone to press.

Don't forget that we want you to send in your own personal news regardless of whether we have written you or not. We are on the home stretch now for one grand celebration next June, and it is up to each one of us to get busy.

In speaking about our celebration next June, here is a suggestion from George Jones:

> How about the 1905 publication for next June? What has been decided since I saw you here several months ago? In connection with the reunion in June, why not suggest to the men that they hunt up old Kodak pictures, taken at Tech, and turn them in ahead of the reunion, so that we can have a few lantern slides made to use at one of our meetings in June? We would probably be reminded of some very humorous incidents which we have partially forgotten.
>
> 1905 affairs in Chicago have been rather quiet, although there has been considerable activity in the Northwestern organization. Our annual outing took the form of an automobile trip to Channel Lake, September 11 and 12. We also took part in an intercollegiate outing consisting of an automobile parade, ball game and dinner, September 25.

It seems as though this suggestion regarding old snap-shots is mighty good. The secretary has already dug up a few negatives

taken at the Tech Shows, and had almost forgotten what beautiful damsels some of you fellows made. Some of these photographs taken in the dressing rooms might make you blush. Dig out your old *Technique* and see if this doesn't remind you of some Kodak prints which you can get by going through your own archives or by raiding those of someone else. Seriously, though, we ought to get a collection of mighty interesting lantern slides. Please send them in at once.

Jimmy Barnes has written as though we were not planning to combine our tenth anniversary with the "All Tech" reunion next year. We had as you have noted from the last REVIEW a rattling good time this June, but don't forget that our "real tenth" reunion will be celebrated according to old '05 methods next year.

We expect to have our "Class Boy" with us next year, for here is the last paragraph of the letter from Jim Barnes:

I might say that James, who has now grown to considerable dimensions, is looking forward with anticipation only less keen than my own to the reunion next year, when he expects to occupy a prominent seat at the Pop Concert in accordance with the promise I made him several years ago.

The following has been received from A. H. Smith, who is with the Sefton Manufacturing Company of Chicago:

A recent change of occupation to position of production engineer with the above company (Sefton Manufacturing Company) has brought me out of the atmosphere of a town of 3,000 to this sad and noisy city.

A. C. Gilbert replied to our notice regarding this year's reunion as follows:

I am very much disappointed that I cannot take in the doings this year. I had to skip everything last year and have counted on a big time this June. Three weeks ago I "changed my job" from the Merrimac Chemical Company to Charles Pfizer & Company, 11 Bartlett street, Brooklyn, N. Y., and now I must stick tight, being new at the work. I shall go over to the New York club, as soon as I get time, and try to get acquainted down here. Please think of me as a sorrowful absentee this year and give my regrets to all the boys.

We understand that Gilbert is assistant chemist with the Charles Pfizer Company.—Billy Spalding has "gone and done it." He was married August 26 to Miss Alice Brown, of Buffalo, N. Y.—Bob Gardner, yes, Bob, announces his engagement to Miss Eva C. Hungerford of New London, Conn. Bob was with us this June and in all probability will be on hand for our big reunion. He won't say whether Mrs. Gardner will be with him or not.—In a newspaper account which appeared in the Boston *Herald*, August 30, we note that Furer, J. A., is doing some good work. We quote from this clipping as follows:

The raising of Submarine F4 marks the successful ending of the salvage operations. When the vessel was lost, it seemed barely possible that the craft might not be full of water, and hence was resting lightly on the bottom. It was due to the work in charge of Admiral C. B. T. Moore in command at Pearl Harbor, Naval Constructor J. A. Furer, attached to Pearl Harbor Station, and Lieutenant C. E.

Smith, that the submarine was successfully raised. The apparatus used was designed by Naval Constructor Furer and made under his direction.

Another of our naval men is doing work in connection with the inspection of lake ships at Chicago. A Chicago newspaper clipping, dated August 2, tells us that Nelson has been chosen as a member of the committee on harbors to conduct the city investigations.—Willard Simpson is in San Antonio, Texas, and the secretary recently received from him the following letter:

This will introduce my friend, Mr. Lauro Martinez, who goes to Boston to enter Chauncey Hall School in order to prepare for Tech. His family are old friends of my father and prominent in North Mexico, his uncle being Gen. Venustiano Carranza. He will be a stranger in a strange country, so I commend him to you, asking such courtesies as you may be able to extend to him and get him located right.

The secretary had a very interesting talk with Mr. Martinez, who had just come from San Antonio, where Simpson is practising as a structural engineer.—Edward C. Smith of Toronto, Ontario, Canada, writes that he seldom runs across any M. I. T. men.

I see a few men from Toronto University at the meetings of the Society of Chemical Industry. Canada is busy turning out shells and ammunition and every machine shop has war orders. It is very hard to get machine shops to make repairs or special machinery because they are so taken up with shells. The firms making uniforms, boots, harness, motor trucks, etc., are all working long hours. Most of the other plants without war orders find business rather quiet, though some improvement has been noticed the last few weeks. In the dry battery business, we find that our shipments are better than those of previous years. Recruiting goes on apace and the call for volunteers continues to ring throughout the land. Seventy thousand of Canada's best are at the front and 80,000 are in training here. Some weeks ago, my stenographer announced early one morning that he had enlisted and should have to leave at half past eight. He is now in the Army Service Corps. Four of our former employees are at the front or in the training camps. One Austrian who worked for us three years ago has been in the Austrian Army and is now a prisoner in Russia.

Melba gives a concert for the Red Cross tomorrow evening and similar activities for patriotic and relief purposes are going on all the time. Canada is doing her bit to defend the Empire and uphold the cause of liberty.

The *Engineering Record* of October 2 has the following item:

James N. Gladding, formerly city engineer of Albuquerque, N. M., has been appointed city engineer of El Paso, Tex. He was graduated from Massachusetts Institute of Technology in 1906. After spending a few months as draftsman for the American Cableway Company, of Fall River, Mass., he was appointed city engineer of Albuquerque, which office he held continuously up to the present appointment.

As predicted, after copy for the above had been sent to the printer, the following two letters were received. The first, from Mrs. John C. Eadie, gives a suggestion of the war atmosphere of England:

In my husband's absence from England, I opened your letter addressed to him. I will give you a brief account of his doings. My husband endeavored to obtain a commission in either the Royal Engineers or as an engineer in the Navy as he holds a first class Board of Trade Certificate and considered his training fitted him best

for either of these branches of the service. He was unsuccessful on account of his age, which is 37!

Then, through a friend, he heard that a gentleman had offered the use of his motor-launch to the British Red Cross Society, on the condition that he manned it with his own crew. Of this launch, fitted with a 25 H. P. Diesel engine, four berth cabin, searchlight, syren, etc., he was given charge and left England last month, with two voluntary helpers as crew. The launch, which will be used for towing the wounded and in connection with the hospital ship, is to be stationed at either Mudros Bay or in Alexandria.

I am afraid this is a very uninteresting statement, but, as my husband had not actually started work when I last heard from him, I can give you no more details.

He was very anxious to help his country in some way and, as his age seemed to bar him from active service, he was very glad to have the opportunity of doing Red Cross work.

The following from Robert C. Cutting gives the impression that in Australia, for neutrals, at least, the motto is "Business, as usual":

Your circular of May, 1915, reached me by last month's mail. The length of time required for mail from home to reach me here makes me realize how very far away that place really is.

I am now under contract with the South Australian government as constructing engineer for a system of locks and dams to render the River Murray navigable throughout the year, and incidentally to help in conserving the water for use in irrigation of the lands adjacent to the river.

The River Murray is the largest river in Australia and, taken in conjunction with the River Darling, forms one of the longest water-ways in the world. The discharge, however, is comparatively small; the maximum being approximately 43,500 second-feet, and the current is very gentle. There are, in the river valley, large areas of very fertile land, but for the most part, they are available for cultivation only by the aid of irrigation. The average rain-fall of the Murray Valley is only 13 inches per annum and in some places the actual rainfall is only 6 inches per annum, but the land has the characteristics of many dry countries of being extremely productive under irrigation.

The improvement consists of the construction of a system of locks and movable dams of the Boulé type, the present scheme including nine to be built by the South Australian government, and later increased by others to be built by the Victorian and New South Wales governments. The estimated average cost of these nine locks and dams is approximately £100,000, or $500,000, each.

The construction plant is now being collected together and it is interesting to know that practically all the important items are of American manufacture. We have such well-known plant as Austin stone-crushers, Ingersoll-Rand pneumatic machinery, Lidgerwood hoisting engines, cableway and derricks, Blake & Knowles pumps and Morris centrifugal pumps. A steam towboat is being built at Cincinnati, and we have a Marion Steam Shovel Co.'s dipper dredge. Fay & Egan woodworking machine, Niles-Bement-Pond machine tools and Hayward clam-shell and orange-peel buckets are also included on the list.

The work is interesting, but the remoteness from the base of supplies, Australia having comparatively few manufacturing industries, makes progress slow at the start. I have heard Australia called "The land of plenty of time" and I quite believe it, for the people seem in no great hurry, and the workman is not rushed for speed.

I believe I am the only Tech man in South Australia.

There was a false alarm in a previous issue about our Ten-Year Book. The chairman of the committee resigned when the glad news of his appointment was broken on him. However—we won't

make any announcement now—but you may hear from the committee shortly—and please answer right (write) back when you do.

1906.

C. F. W. WETTERER, *Sec.*, 147 Milk Street, Boston, Mass.
JAMES W. KIDDER, *Asst. Sec.*, 50 Oliver Street, Boston, Mass.

A. L. Bell is still located in the Canal Zone and a recent letter from him has the following interesting news:

> The last year has been a reasonably busy one with me. Have had my usual run of miscellaneous work for our own plants as well as for other divisions, and in addition have had charge of putting the fuel oil handling plants into service and licking them into good running condition, preparatory to turning them over to the supply department, which will operate them permanently.
>
> The slides are giving a lot of trouble at present but shipping is kept moving with only slight delays, and it does not seem likely that anything worse than temporary embarrassments will result from them.

Charles G. Loring was married on August 4 to Miss Katherine A. Page, daughter of Hon. Walter Hines Page, the American Ambassador to Great Britain. Loring is a member of the firm of Loring & Leland, architects, with offices in the Winthrop Building, Water street, Boston.—Miss Mildred Eleanor Blodgett has become instructor in mathematics and natural science at Berkeley Institute, Brooklyn, N. Y. Miss Blodgett, since leaving the Institute, has had much teaching experience both in private schools and college work, and for the past four years has been instructor in geology at Holyoke College.—There has been announced the engagement of Robert Sherman Gardner and Miss Eva Celestine Hungerford, both of New London, Connecticut.—Herbert S. Whiting has become associated with J. Livingston & Company, Inc., electrical contractors and manufacturers of electric lighting fixtures, with offices in the Grand Central Terminal Building, New York.—George M. Henderson has left Arizona and is now somewhere in South America, but I am unable to learn his exact address.—Hayward and Reynolds, both of Course III, are now located in Denver. Both are married and Reynolds has two children, Hayward one.—C. F. Willis, who is director of the State Bureau of Mines and professor of mining and metallurgy in the University of Arizona, is doing a great deal of lecturing throughout that state.

1907.

BRYANT NICHOLS, *Sec.*, 10 Grand View Road, Chelsea, Mass.
HAROLD S. WONSON, *Asst. Sec.*, Waban, Mass.

In accordance with the request of the editor of the REVIEW made early in the summer, the secretary wrote personal letters to all members of the class whom he believed to be in foreign countries or in United States possessions far distant from Boston. There

were only twelve such fellows, and but one reply has been received, that of Willis Ranney, and he is not out of the United States after all. We cannot give, therefore, any new or personal facts about any '07 men far away. So far as we know, the following men are the only ones now in this group: O. G. Fales is in Pernambuco, Brazil, with the Gregg Company, Limited, the same concern that he has been with since graduation.—Marcellus Rambo is in Rio de Janeiro, Brazil, at Rua d'Assemblea 104. We do not know his occupation.—H. J. C. MacDonald is a mining engineer with Granby Consolidated Mining, Smelting and Power Company at Anyox, British Columbia.—Kenneth G. Chipman went to the far North with the Steffanssen expedition in the summer of 1913. The secretary has heard nothing from him since.—J. P. Chadwick is believed to be in Rancagua, Chile, South America, a mining engineer with Braden Copper Company.—Rutherford Bingham, secretary of Legation, United States diplomatic service, Quito, Ecuador, S. A.—B. C. Gupta, in charge of extensive silk mills in India.—W. B. Gonder, chemist and sugar expert, with the Havemeyer Sugar Plantations, in Mindoro, of the Philippine Islands.—J. J. Thomas, captain, U. S. A., in the Philippine Islands. John left Boston last July, but has not yet written us as to his exact whereabouts.—A. T. Kolatschevsky, telephone expert in Petrograd, Russia.—Clarence D. Howe is chief engineer with the Grain Commission of Canada, having charge of the erection of many big grain elevators in different parts of Canada.—G. A. Crane's address is Box 1736, Edmonton, Alberta, Canada.

Now the January number will be specially devoted to the telling of men who are giving service to the state, community, or municipality without compensation. Will all '07 men who are included in this list please send in their letters telling about themselves at once?

The following notes have been gathered about some of the men nearer at hand: Jim Barker, who is teaching in the civil engineering department at the Institute, became the father of Robert Rankin Barker on July 12, 1915. Jim is more smiling than ever now.—Our second item is along the same line. Robert Wright Burwell was born on September 8, 1915, to Mr. and Mrs. Albert L. Burwell, at Winsted, Conn.—L. R. Davis is now with John H. Leavell, at Park City, Utah. His address is care of Kirk & Leavell, Newhouse Building, Salt Lake City, Utah.—It is with sadness that we learn that Bert Day Johnson has been obliged to go to the hospital for the insane at Danville, Pennsylvania.—Edward G. Lee is now located at 47 Lake street, Auburn, Maine, where he is a civil engineer.—John McMillin was married on September 22, 1915, to Miss Enid N. Shaw of New York. They will be at home after December 1 at 3495 Broadway, New York City.—E. P. Noyes (better known as "Tucky") writes from Portland, Maine, as follows:

I'm back at the old job again—resident engineer for the State of Maine Highway Commission. The job here is 7½ miles of 1:2:4 concrete, 16 feet wide and 6 inches deep, on the main line from Portsmouth to Portland. It will cost about $100,000 when it is completed, which will be about November 1. . . . To cut this short and give the most personal news at the end, you can put me down as married to Miss Adele T. Greenidge, February 19, 1915.

The following is taken from the Toledo, Ohio, *Blade:*

Prof. Allen R. Cullimore, dean of the engineering college of Toledo university, has just published a book on The Use of the Slide Rule. The book is the outgrowth of the author's work of teaching the use of the slide rule to engineering and industrial students. Its purpose is to develop the ideas of the operator rather than to give empirical rules. Dean Cullimore had much practical experience following his theoretical course with Massachusetts Institute of Technology.

Willis Ranney, who we thought was in Spain, is in San Antonio, Texas, and has been since the beginning of 1914, when he returned from work he was doing in Spain because of the rush of work of his concern, Bartlett & Ranney, in this country. They are doing consulting engineering work, and have been very successful. Address Chandler Building, San Antonio.—W. P. Rayner is in Washington, D. C., manager for the White Company, motor trucks and cars. Address is 1233 20th street, N. W.—Edward H. Sargent has been appointed assistant engineer of N. Y. State Conservation Commission in charge of Water Power Storage and Drainage. This is the result of a special Civil Service examination just held for this position.—Gilbert Small, who has done successful engineering work with J. R. Worcester Company of Boston, was married on October 2, 1915, to Miss Christine Schoff of Waltham, Mass. They will be at home after December 1 at Cottage street, Belmont, Mass.—Theodore L. Smith is now with the American Puzzle and Novelty Company, at 30 Church street, New York. The following clipping from the Boston *Herald* shows that Starkweather was well qualified to be a member of the notorious "executive Committee" at the '07 Five-Year reunion in 1912:

Oscar H. Starkweather, superintendent of streets in Wakefield, thinks he could qualify as operator of a jitney "train" should he ever decide to forsake the road-building business.

Mr. Starkweather treated Wakefield to a sight that drew several hundred people to the curbings a few days ago, when he decided to move the highway department en masse. The procession included two steam rollers, a huge bin for crushed stone, two big wagon-loads of lumber, an air compressor engine, an engine and portable stone-crusher and some smaller apparatus. The minor sections of the loads comprised every pick, shovel and small appliance in use by the department and the two rollers were used for towing.

The whole outfit was transported nearly three miles, from Greenwood district to the extreme northern part of the town. Street work in Greenwood, where all the apparatus had been located, was completed and Superintendent Starkweather was about to begin a $15,000 job on Lowell street in the north ward. His ingenuity enabled him to cease Greenwood operations one night, pack up the next morning, move that afternoon and begin the Lowell street work the following day.

The secretaries will be grateful if anyone can send a correct address for J. R. Randall, '07. We cannot locate him.

1908.

RUDOLPH B. WEILER, *Sec.*, Care The Sharples Separator Co., West Chester, Pa.
CHARLES W. WHITMORE, *Asst. Sec.*, Care of H. C. Castle, Inc., 161 Devonshire Street, Boston, Mass.

Stirring Story of the Sizzle.

On June 25, with golf clubs, tennis rackets and *a Package*, "The Original Roughs" took the 4.37 train from Boston to "Storm Oak Bluffs." Some storm!

On the way down, we picked up Ray Drake, only to lose him again at Pocasset, as he had a family, a business, and a few other reasons to keep him away from the Big Time.

Going aboard the *Uncatena* for the sail across the Sound, we met Pop Gerrish and Clif Wade, both bound for the Bluffs. Pop, now disguised as a promoter, had his Trackless Trolley to lay before the town fathers that evening, so we bade him farewell at the end of our sail, but Clif was with us to the finish.

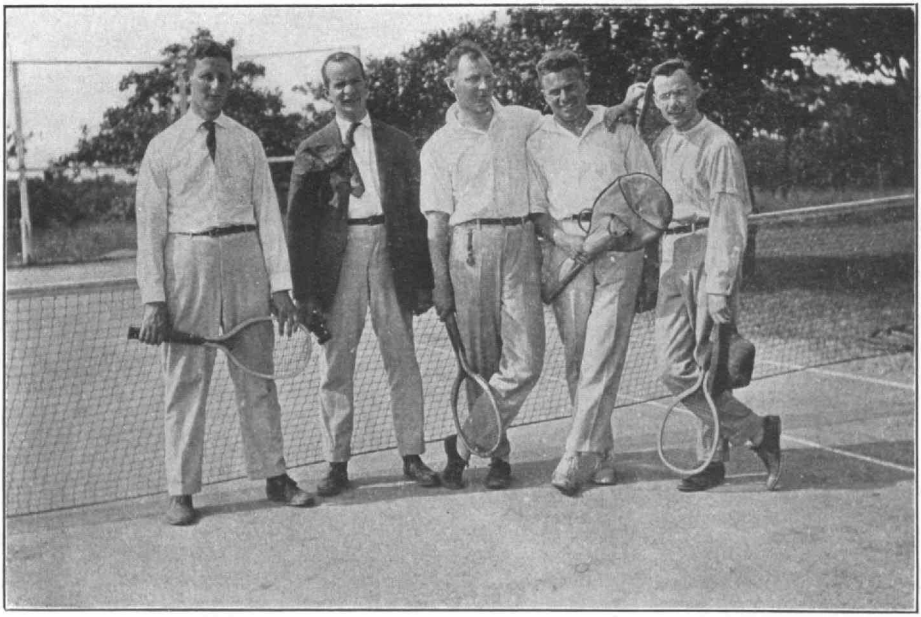
The clocks had struck eight as we landed at Oak Bluffs and saw our host, Eb Wells, with two bell boys and push carts, awaiting us. We put the "impedimenta" in the carts, but *a Package* was personally conducted, and we strolled up the street to the New Sea View Hotel. One by one we registered, first attempting to use the trick pencil which always jumped skyward. Then we paired off and drew for rooms, the keys to which were put in the safe so that no one should oversleep.

What does a menu amount to? As we sat down at the long table, fourteen of us, we glanced at the menu and said to the fair maids in waiting, "Commence, we'll tell you when to stop," and the meal was on. A good cook, a good appetite and good food make an ideal combination to produce silence, so there was little noise for half an hour, except when Coffin realized that he had a "dribble glass," and, later, when Martin Luther's cigar began to imitate a Roman candle.

By 9.30 it was late enough to go down street and help put the town in doors for the night. After doing this nicely—ask Coffin—we captured a bowling alley and the single men made the double, excuse me, married men look like amateurs. Reaching "home" by eleven, we had a good "sing" and most of us went to bed. Cary and Coffin had turned in an hour before, so we used their room for a lumber yard to be sure that they were asleep. The night-owl twins, Ferrandi and Carter, kept a game of cards in progress until two, so that a few of their neighbors could not sleep.

Saturday morning the fire alarm went off at six o'clock and those who hesitated to arise were capably assisted to their feet or the floor by the Wide Awake Society. Although it started to rain, several went in for a swim, and no one knows to the present

Naught Eight Sizzle—"Watch Our Smoke"



Naught Eight Sizzle.—"Puff Ball Biffers"

Naught Eight Sizzle—"We are happy,—"

Naught Eight Sizzle—"A Serious Moment"

day whether Tim Collins yelled so loud for a towel because it was raining or because he contemplated a swim.

During breakfast, a period of uncertainty during which each man held his butter plate in his lap so that no one else should have it, several downpours threatened to put the baseball game on the absent list, but by ten, thanks to the sandy soil and Clark's diligent work with a shovel, most of the lakes on the diamond had disappeared, and the game began.

The single men won, 29 to 19, but the score fails to indicate the thrills which caused the water boy to spill his pitcher of water every few minutes. Although the men changed their positions in the line-up frequently, the following shows the batting order and the final positions as played:

Single Men	*Married Men*
L. T. Collins, Capt., c.	C. W. Whitmore, Capt., 3d.
W. H. Toppan, 1st	R. J. Batchelder, p.
B. W. Cary, 2d	R. Whitmore, r. f.
A. L. S. Ferrandi, p.	C. L. Wade, l. f.
L. Coffin, l. f.	E. I. Wells, 1st
H. L. Carter, r. f.	C. W. Clark, 2d
H. B. Luther, 3d	A. W. Heath, c.

The base running was so frequent and violent that it was not uncommon to call time for a few minutes so that the runners could sit on a base and recover their breath. This action was also necessary at times for fielders who had been on excursions after the home runs.

At dinner we consumed enough for a German army corps, and let out another hole in our belts.

For the afternoon it was decided to try tennis and golf, so the party walked to the Country Club, where Luther and Heath came out even up on 14 holes with a maximum of not over 149 strokes. Each received a suitable medal for this endurance contest.

At tennis, doubles, the Near-Married and Married Team of Collins and C. Whitmore defeated the Near-Married and Single Team of Cary and Coffin, 6–1, 6–2, 6–2, 6–0.

Singles, Toppan beat Batchelder 6–1, Toppan beat Carter 7–5, and Collins defeated Coffin 6–0. Apparently a love game means nothing to Coffin, but ask Collins about his. How many more weeks of "single cussedness," Tim?

Doc Leslie was due by the night boat, so the gang formed under the banner which had done such good service at Pops and paraded through the town, around the town policeman, and to the wharf, singing the famous songs about "One Grasshopper, etc.," and "Old Man Bill." Apparently the townspeople appreciated this demonstration for they left all business to watch and listen, and some even applauded. Doc was taken in tow and escorted to the hotel where we gave him all the comforts of home, including the

notorious dribble glass. After that we sang and enjoyed the moonlight from the front veranda.

At six Sunday morning the fire alarm worked overtime and all hands were up for early breakfast as we sailed on the *Mist* at eight. The sail took us to Edgartown, South Beach, Cape Pogue and way stations but we returned in time for a big dinner. Not that the quantity of this meal was greater than that of others, but how we did "wade into it."

After such a dinner it was imperative that we have more exercise, so all adjourned to the Country Club, some to play (at) golf, others to watch, caddy, advise or supply language in case of need. The players started off in this order, Luther and Cary, C. W. Whitmore and Collins, Heath, Batchelder and Carter, and Coffin and Leslie. Balls were driven into the water hazard, caddies were left exhausted under the trees, but we all played at least ten holes, one way or another. As all adding machines had been left at the hotel, we are unable to give the exact scores.

After a bountiful supper (say Tim, was that the time you ate four full grown "broiled lives"?) we took the front off the piano, Roy Whitmore put his fingers to the keys, and we gave the admiring villagers, who collected in front of the hotel, a long selection of songs, both popular and classical, which drew well-deserved applause. Surely we all gave more thought to the words of the "Perfect Day" as we realized what enjoyment the outing had given us and what the comradeship of 1908 always means on a reunion. We had had a "Perfect Day."

Monday morning we were up at 5 o'clock and, after a hasty breakfast, took the six o'clock boat for Boston and work, saying "Good bye" to Eb Wells with a great appreciation of his part in making the 1908 Sizzle a howling success. We'll all root strong for the New Sea View, Eb.

To all the fellows who could not be with us at Oak Bluffs we say, "Don't miss the next one if you have to be carried there on a stretcher." To all those who were there with us we grunt, "How long before we can get up another Sizzle?" and the answer is "No longer than absolutely necessary."

The committee, in the words of the "pote," "They just nacherly done themselves proud," and we all thank them for it.—*Winch Heath, Sizzle Editor.*

Names of those present: Ralph J. Batchelder, Roy Whitmore, Winch Heath, C. W. Clark, Lang Coffin, Howard Luther, "Doc" Leslie, A. L. Ferrandi, Clifford L. Wade, Nick Carter.

Sizzle Committee: Tim Collins, chairman, Charles Whitmore, Burt Cary, Bill Toppan, and Eb Wells.

I. *On the Part of the Secretaries*

The regular bi-monthly dinner was held at the Boston City Club, Tuesday evening, September 14. On account of the heat

it was decided to omit the bowling match, and for that reason we consider the Married Men should be credited with another win. Chairman Collins of the "Sizzle" Committee read the financial report, which was approved. There was a balance of a little over six ($6) dollars left, and it was voted to have two more cuts put in the REVIEW with a writeup on the "Sizzle," besides the page allowed free. This will probably cost about eight ($8) dollars. If it is more than the amount on hand it will be made up out of the class treasury. The following were present: E. H. Newhall, L. Mayo, L. T. Collins, R. J. Batchelder, A. L. Ferrandi, A. B. Appleton, A. S. Cohen, W. D. Ford, A. W. Heath, E. I. Wells and C. W. Whitmore.

Your secretary was in attendance at the convention of the American Foundrymen's Association at Atlantic City the week of September 27, and had the unexpected pleasure of meeting "Doc" Leslie there. He incidentally mentioned the fact that he had just returned from the 3d Military Camp at Plattsburg, N. Y., and says the Camp is a good proposition and can be recommended to any Institute man. F. N. Pierce of '08 was also at the encampment. "Doc" says he qualified for a sharpshooter's medal while there and if you don't believe it you just ask the proprietor of the shooting gallery on the boardwalk at Atlantic City. P. D. Wells, '10, of Royersford, Pa., was also there. He is engaged in the stove business at that place. W. Malcolm Corse, '99, was in charge of a large exhibit of bronzes made by his company, The Titanium Alloy Manufacturing Company, Niagara Falls, N. Y. He also read a paper on "Aluminum Bronze Alloys" before the American Institute of Metals which was holding its convention jointly with that of the Foundrymen's Association.

Karl R. Kennison, assistant engineer Providence Water Supply Board, 661 Westminster street, Providence, R. I., has an article in the September *Proceedings* of the American Society of Civil Engineers, "The Hydraulic Pump in Open Channel Flow at High Velocity."—R. C. Collins is with the Chelsea Fibre Mills, Brooklyn, N. Y.—J. W. Maxwell returned from Chile sometime ago and has been working temporarily for the American Smelting & Refinery Company at Murray, Utah, on their experimental farm. This company has been doing a great deal of research along the line of determining exactly the amount of damage that is done to agriculture by the smoke and fume from smelters. His address is University Club, Salt Lake City, Utah.—John T. Ellsworth is with the Anaconda Copper Mining Company, at Anaconda, Montana, having left Missouri some time ago.—The following item from a local paper tells of Lee Hagood's departure to Russia: Hagood has been in the lighting engineering department of the General Electric Company.

A farewell luncheon was tendered Mr. Lee Hagood of the General Electric Company. Mr. Hagood sails on the *St. Paul* from New York on his way to Petrograd

where he will spend some time in the interests of the General Electric. A very enjoyable period was passed over the tasty luncheon and many expressions of regret were heard at Mr. Hagood's departure for foreign soil and scenes of turmoil and strife. Those present were N. A. Lougee, R. C. Robinson, C. N. Draper, F. W. Caldwell, Dr. W. R. Whitney, Dr. W. D. Coolidge, N. J. Kingsbury, W. C. Arsen and M. M. Davis.

II. *Matrimonial*

News under this heading has been remarkable for its paucity in the last few issues but here goes to make up for past deficiencies. B. W. Cary was married to Miss Mildred E. Smith, September 11, at Waltham, Mass.—A. T. Hinckley was married to Miss Hortense R. Cole on June 24 at Niagara Falls; at home after September 18, 548 Fifth street.—W. E. Booth was married on September 20 to Miss Mary A. Graves at New Haven, Conn.—L. T. Collins was married October 20 to Miss Marjorie Post at St. Louis, Mo.—Carl H. Bangs was married September 20 to Miss Georgiana H. Kelley at South Weymouth, Mass.; at home after November 1, 8 May avenue, Braintree, Mass.—The engagement is announced of H. R. Sewell, Houston, Texas, to Miss Clara M. Welsh, Smith '08, of Hudson, Mass.—C. M. Steese was married October 18 to Miss Hazel Adams Speirs at Ardmore, Pa. At home after January 1, Frankford Arsenal, Philadelphia.

1909.

CARL W. GRAM, *Sec.*, with Walter Baker & Co., Ltd., Milton, Mass.

During the summer, announcements were received of the following marriages: Miss Mary Barton Allen to Lewis Dexter Nisbet on June 26, at Providence, R. I.—Miss Marjorie Muir to Edward Ernest Wells on September 3 at Westmount, Quebec. Mr. and Mrs. Wells will be at home at 192 Girouard avenue, Notre Dame de Grace, Montreal.—Miss Florence Victoria Ciani to Clark Shove Robinson on September 4 at Perth Amboy, New Jersey. "Robby" is back at the "Stute" in the industrial research laboratories.—Charlie (Nut) Campbell was best man at Robby's wedding and also acted in the same capacity for George Lunt, X, '10, who was married during the summer.—Lester H. King wrote in part from the Technology Club of New York:

I had the pleasure of seeing Herbert Wertheim, '09, while he was in New York earlier in the summer on a business trip to purchase supplies ordinarily obtained for his piano business through European channels now cut off by the war. He inquired especially after many of his old friends of 1909 and on a very hurried trip which included Boston intended to look you up, but finally had to give that up together with many other plans he had made. He finally went back to Australia on the first boat out of San Francisco in August, feeling somewhat worried over the tension between Germany and the United States and also anxious to get back on account of conditions at home. Wertheim's final injunction was that I should send you five dollars which he left for me and I am enclosing by check to apply on his class dues. He is very loyal for one who had to drop his friendships so shortly while at Tech and has the right spirit. I wish more of the fellows might have seen him. He reads

the REVIEW regularly, he says, and otherwise keeps in touch with things. I am sure he would appreciate hearing from you. Wertheim's address is—Herbert Joseph Wertheim, Wertheim's Piano Factory, P. T. G. Ltd., Benvigo street, Richmond, Melbourne, Australia.

The secretary wrote to Wertheim, hoping to receive a long detailed account of his experiences since leaving Tech, but it is "a long long way to go" and has not yet arrived. Several others are expected from Mexico, South Africa and China but are also late. However, Riojo Ohunki was kind enough to send the following from Kure Naval Dock Yard, Kure, Japan:

I was very pleased to receive your kind letter dated May 27 and thank you. Please excuse my not writing to you before this since I came back to home. Anyway we shall meet you at somewhere in Japan or your country as the world is going to be shortened by very convenient communications such as aeroplanes and airships.

It will be pretty long lines to write about my life since I left your country so I write to you just a few lines about my life.

I stayed at Vickers Maxim & Co., England, to learn about practical side of mechanical engineering from June 1910 to November 1910, and I left London to come back home through Indian Ocean. I arrived at home in January after three years since I left home.

I was on service as acting naval engineer with rank lieutenant commander engineer in Yokosuka Naval Dock Yard from January 1911 to August 1914, and meantime I was teaching engineering to our young naval engineers.

Last August I was on board repairship as an engineer, as the war broke out between our country and Germany and I stayed at Tsingtan until February after our navy captured the port from Germany.

Now I am again an engineer in Kure Naval Dock Yard which is the largest one in our country.

Mr. Kado, whom you knew before I was there, is an assistant engineer in this Kure Dock Yard and he is working pretty hard under my classmate engineer. All Japanese people whom you have acquaintance with, are all well. Mr. Kamo is now doctor (Ph.D.) also teaching as professor in Tokyo University. Mr. Kamimura is a chief engineer in private dock yard. Mr. Tomonaga ('09) is teaching at Naval Engineering College. Messrs. Yoshida, Yamagata and Demura are very well, but Mr. Itoyama is not so well now. (In explanation of the foregoing, the secretary was fortunate to become intimately acquainted with several Japanese gentlemen while they were located at the Fore River Ship Building Company in Quincy, designing and inspecting steam turbines that were being built for the Japanese Government. Mr. Ohunki and Mr. Tomonaga were the only ones who attended Tech.)

Now I am fighting against odd jobs; such as repairing of steam turbine, pump, boilers, reciprocating, and internal combustion engines,—with my brain and arms.

I look forward with delight to the time when we shall again meet, meanwhile, keep me posted as to your plans and movements as I shall be very glad indeed to hear from you and your family. I got one girl, she is just 16 months old. She can't walk alone but she can speak single words, such as papa, mama, etc. With sincerest wishes for your health and happiness.

Charles Main writes from Montana: "I expect to leave Great Falls about the first of October and to return to Boston in the early part of November. Will you therefore kindly address any class notices to me at 201 Devonshire street, Boston, Mass."—Horace Clark, writing from Dunbar Hall, Exeter, N. H., contributes the following interesting account of his "doings":

Your letter reminding me of my promise to write you an experience letter just came this morning. I am sorry I have not sent it in before but I was an assistant at the Tech Summer Camp this summer and so did not have much spare time on my hands.

After leaving school I went out to Colorado and put in about two years and a half on location and construction with the Colorado & Southern Railway. After leaving there things looked so dull in the States in railroad work that I decided to hit for South America. I secured a position with the Antofagasta & Bolivia Railway and sailed for Antofagasta in January 1912. The trip down was very interesting indeed. We stopped in Jamaica a few hours and then sailed for Colon. The Canal was under construction at that time and I put in two or three days seeing the sights on the Isthmus including the interesting ruins of old Panama. Leaving Panama I started down the West Coast of South America in a coast boat which had a very mixed cargo, cattle on the lower deck and a coop of chickens for consumption on the two weeks' trip. After leaving the tropical vegetation of Panama, the coast of Peru and Northern Chile is rather disappointing in its barrenness. Due in part, anyway, to the cold Humbolt current, it never rains along this coast, and the only vegetation is found along the few rivers which furnish water for irrigation. It did rain a couple of years ago in Antofagasta but that was the first time in forty years. The natural resources of the country are dependent on this dry climate as they consist mainly of "guano" and nitrates.

We finally reached Antofagasta and there I found that I was to proceed at once to Bolivia. The railroad itself is quite interesting as it operates the main line of over 900 kilometers and 600 kilometers of branch lines on a two and a half foot guage. The newer construction of some 700 kilometers is built to a meter guage and the rest of the road will ultimately be widened to this guage. The road starts at sea-level at Antofagasta and climbs to an elevation of about 13,000 feet at Ascotan in a distance of 360 kilometers. It accomplishes this climb with very little heavy work except the viaduct over the River Loa which is the highest in the world. Near Ascotan we passed several smoking volcanoes and a large borax lake where the borax is obtained by the simple method of plowing it up with a pair of oxen and hauling it to the refinery. After leaving Ascotan the road drops a little and runs along the plateau between the coast range and the main range of the Andes at an elevation of about 12,000 feet. This plateau is of varying width and is flat as a billiard table for miles. On this plateau we passed the salt lake of Uyuni, where the natives cut the salt as we cut ice and carry it to all parts of the country on burros and llamas. We also passed Lake Poopo which has an inlet from Lake Titicaca but no outlet. Bolivia is not to be confounded with the coast of Peru and Northern Chile in the matter of rainfall. I arrived in the middle of the rainy season, which lasts from November to May usually, and the plateau looked like one big lake. As we went further into Bolivia we found more vegetation, but there are no trees or any very good farms until you get down to about 8,000 feet elevation on the eastern slope of the Andes.

The people of Bolivia are divided into three classes—the Indians, who are descended from the Incas and their subjects, the Cholos, half Indian and half Spanish, and the upper class who claim pure Spanish descent. The Indians do most of the manual labor on the railroads, in the mines and on the farms. They lead a very primitive life, dress very simply, eat dried beef, potatoes, and corn, mainly, and almost without exception chew coca leaves, which apparently enable them to withstand hunger and fatigue. The Cholos form the artisan class and furnish the country with storekeepers, carpenters, blacksmiths, shoemakers, etc. The upper class owns most of the land and rents it to the Indians who pay for it with their labor. The houses are all of adobe and are built around a patio in the Spanish style. There are a large number of holidays, which they celebrate, and on these occasions the booze flows freely.

There were four lines under construction during the three years that I spent in Bolivia and I worked on three of them during that time in charge of surveys, construction, and maintenance. The Rio Mulato-Potosi Line crosses the main range of the Andes at an elevation of 15,819 feet which makes it, I believe, the highest in the world. Potosi Hill was mined by the Incas before the days of the Spanish

Conquest and still produces silver and tin. The first mint in this country was there and you can still see the old wooden machinery which was used. It is a very picturesque old town and has some very interesting carvings on its churches. The line to Potosi was completed during my first year in Bolivia and in its honor the town held a celebration which lasted a week. Practically none of the inhabitants had ever seen a railroad or a locomotive before and they turned out in thousands to see such a curiosity. This line will eventually be carried on to Sucre, the old capital of Bolivia.

The Uyuni-Tupiza Line is to connect Bolivia with the Argentine and is now about half finished. It has already reached some important mines from which it receives ore for shipment. The highest point on this line will be over 14,000 feet.

The Oruro-Cochabamba Line is perhaps the most interesting and is quite important as it connects Oruro, one of the most important business towns on the plateau, with Cochabamba, which is the center of a large agricultural district and is on the best route to the Amazon and its branches. This line starts at an elevation of a little over 12,000 feet, climbs to about 14,500 and then drops to about 8,000. There is some interesting development on this line, five tunnels and a large amount of bridgework and heavy earthwork. The maximum grade is a three per cent. compensated and the maximum curve fifteen degrees metric.

The Viacha-La Paz Line is only 30 kilometers long and is to give the railroad an entrance into La Paz itself. La Paz is the capital of Bolivia and has a population of about 70,000. You approach the city from the level plateau without seeing a sign of it as it lies a thousand feet below the surrounding country. It appears suddenly, as you reach the very edge of the plateau, with its red and blue roofs, and green trees lying far below you and the snow covered mountains in the background. These mountains rise to a height of 23,000 feet. While it is very picturesque, it presents certain engineering difficulties and the descent is now made in electric cars.

I spent about two years of the three under canvas but we certainly made ourselves comfortable in spite of the high cost of living. Tobacco cost us from $3.50 to $5.00 a pound and canned food from 40 to 80 cents a can. The high altitude does not bother one after the first couple of weeks and although one cannot exercise as at sea level there are several tennis courts in the different towns. The cooking is a bit different at first but you can soon train a cook to your likes and dislikes. The climate was very good on the whole as the altitude counteracted the excessive heat of the Tropics. The days were warm and the nights always cool. In fact we celebrated the Fourth of July, 1912, in a couple of feet of snow.

Everything was going nicely until the European War broke out. Then all work was stopped on the railroad during the month of August but started again in September on a reduced scale. Practically all the railroads and mines were financed from Europe and this supply of capital was immediately cut off. On starting in again in September all native wages were cut in half and employment was given to many who had no means of support in order to keep them from starving.

I stayed until December and then started home. I left Bolivia by way of Lake Titicaca, Arequipa, and Mollendo. Lake Titicaca is a large inland sea at an elevation of 12,000 feet and it takes all night to cross it in a small steamer. On the Peruvian side of the Lake we took the Peruvian Southern Railroad over a road of many curves to Arequipa, which is a true oasis in the desert, about half way down to the coast. It is chiefly noted for the Harvard Observatory there and a line of Ford taxis. Mollendo is more of an open roadstead than a real harbor and as the sea was somewhat rough on the day of my departure I had the unusual experience of being lowered into the small boat to take me out to the ship by a steam crane. I stopped in Lima on the way up the coast to see the cathedral, which is very interesting with its carving. The canal was completed, of course, and looked very different from what it did three years before.

I studied at the 'Stute this spring and obtained my degree after a delay of six years. This summer I was an assistant at the Tech Summer Camp, which brings the story of my wanderings up to date.

Just as this letter was going to press, cards were received announcing the birth of Miss Margaret Thorburn Elbert on October 6. Congratulations, Jack!

As you will notice by scanning the news of other classes, this issue made a specialty of letters from fellows in foreign climes. The other feature for class news in January will be the work Tech men are doing for the state, municipality and community, more especially with reference to voluntary service. (However anecdotes from those who have done service at Atlanta will not be refused.) Research or investigation work in public service or any other branch that will be of direct benefit to mankind is particularly requested. This kind of news is a special feature and will not in any way take the place of regular stuff which will appear as usual.

The April Review is to be made especially entertaining by reminiscences of Tech life so begin racking your brains for buried treasures.

The secretary regrets to report the death of Charles W. Leeder. A letter from his father received this summer states that Leeder lost his life at Seattle, June 17, 1914, in a drowning accident.

1910.

Charles E. Green, *Acting Sec.*, 63–75 Pitts Street, Boston, Mass.

What little news has filtered through to your overworked secretary has been of the most happy variety, notably the two following items:

Mr. and Mrs. Stewart L. Henderson announce the arrival on June 28 of Martha Ann Henderson, 1108 Braddock avenue, Swissvale, Pa.—Mr. and Mrs. R. E. Gegenheimer announce the birth of a son, Lewis Edwin Gegenheimer, on March 10, 1915.—Mr. and Mrs. William Elliott of Winchester announce the engagement of their daughter, Lillian May, to Kenneth Armstrong, Course I. Armstrong is now on the engineering staff of the Interstate Commerce Commission.—Mr. and Mrs. G. Byron May, Jr., of Hyde Park, Mass., announce the engagement of their daughter, Evelyn, to Donald Adams French, Course IV.—Nathan Ransohoff appeared in Boston a few days ago and confessed that he was engaged to Miss Martha Beckman of Cincinnati, Smith '16. Nate always was fond of Cincinnati. He is building concrete machinery for the Ideal Concrete Machinery Company of Cincinnati.—George P. Lunt, Course X, was married October 19 to Miss Mary Perrin of West Pittston, Pa. George is on the chemical engineering staff of E. B. Badger & Sons Company.—Ray L. Jones has left the Sulphur Mining & R. R. Company at Villa Rica, Georgia, where he was superintendent, and has entered the employ of the New Jersey Zinc Company at Palmerton, Pennsylvania.—Fred Os-

borne is now with the Ajo Consolidated Copper Company at Ajo, Arizona, via Gila Bend. He took his degree with 1914 and worked awhile for the Wheeler Reflector Company of Boston. At present he is drilling and estimating a new ore body for the Ajo Consolidated Copper Company. He reports that conditions are booming in this district.—Harold Billings is on the engineering staff of the Boston & Maine Railroad, working on the upkeep of bridges, etc.—Ralph Hilscher, assistant engineer with the State Water Survey, University of Illinois, has resigned to join the staff of C. G. Gillespie, director of the bureau of sanitary engineering of the California State Board of Health.

The following new addresses have come in: Braxton Bigelow writes that his address is now 170th Field Corp, Royal Engineers, 1st Army Corps, British Exped. Force, France.—Carl H. Lovejoy, 3485 Broadway, New York.

1911.

ORVILLE B. DENISON, *Sec.*, Hotel Standish, Worcester, Mass.
HERBERT FRYER, *Asst. Sec.*, 1095 Fellsway, Malden, Mass.

☞ MAKE YOUR PLANS TO BE IN BOSTON IN JUNE 1916!

Before this issue of the REVIEW is in your hands you will have received a preliminary announcement of the Grand Technology reunion to be held in Boston next June and which, coming as it does in 1916, marks also the fifth anniversary of our memorable graduation in 1911. It is therefore imperative that we are well represented, in fact, we should be able to make the best showing of any of the classes that have already graduated. That the 1911 celebration may be made a notable success, the secretary has appointed the following committee to manage the affair: Bert Fryer, Charlie Barker, Frank Wood, Ted Van Tassel and the secretary. Plans are in an entirely crude state at present, only general features having been discussed, but ere long more tentative plans will be agreed upon and notices concerning them sent to you all. The main thing to do now is to make sure that you can make the trip to Boston the early part of June, 1916. The committee will take care of the rest.—Several more marriages have taken place and there are a couple of prospective ones. On the twenty-fifth of August, Harry William Waterfall and Miss Marie Ross Sinclair were married in Allston, Mass. Doubtless Harry was able to secure a poetic license for the ceremony, since he is such a veritable Longfellow. Best wishes!—On the second of September L. F. Morrison and Miss Kathleen Betsy Lavell were married in Edmonton, Alberta, Canada. They are now at home at Assiniboia Hall, University of Alberta, Edmonton, Alberta, Canada. Some address! Once again, best wishes!—Here's another, boys! On the eleventh of September, Henry F. Dolliver

and Miss Marguerite Coburn were married in Cambridge, Mass. Oh, you Dollie! Good luck, old boy!—The following clipping from the Boston *Journal* of September 30, 1915, will interest you all:

Mrs. E. J. Buffum of Salem has announced the engagement of her daughter, Mabel T. Buffum, to John A. Herlihy of Boston and New Haven. Miss Buffum is a graduate of the Salem Normal School, and has been teaching in the Cambridge High and Latin School. Mr. Herlihy is a graduate of M. I. T., class of 1911.

Heartiest congratulations, Jack!—Glancing through the Worcester *Telegram* of October 5, 1915, the secretary happened upon the following item which may prove of interest:

Dr. and Mrs. George Wheaton Dixon, 11 Walnut street, have announced the engagement of their youngest daughter, Sara Allyne, to Mr. Orville Boardman Denison, The Standish. Miss Dixon is a graduate of Classical High School, class of 1913, and is a member of the younger social set of the city.

Mr. Denison is a graduate of Framingham High School in 1907 and of the Massachusetts Institute of Technology in 1911. He is connected with the Norton Company.

Are you surprised?—By the way, the last sentence of the above clipping brings to mind the fact that the secretary is no longer with the American Steel and Wire Company, but is now located with the Norton Company of Worcester in the research division, having been with that company three months. Early in October Charlie Barker accepted a position with the same concern so now the two old side-kicks are once more united. Drop in and see them when you're in Worcester!—Mr. and Mrs. K. C. Robinson announce the arrival of Richard Frederick Robinson on September 26, weight five pounds, fourteen ounces. Welcome to the newest member of the 1911 junior list and heartiest good wishes to the happy parents! —Don Frazier is now located in Philadelphia with the American Mutual Liability Insurance Company, and under date of August 24 writes:

The company has transferred me to Philadelphia and I am practically settled now. I shall have charge of their safety engineering department in Pennsylvania and New Jersey, with my headquarters at Philadelphia. Henry A. Hale, Jr., '10, will be head of the Bureau located in Boston, and I will have charge of this branch.

While on my vacation at Wells Beach, Maine, I ran across a funny thing. I was driving down the main road in my Flivver and saw a horse and team drive into a side street and very carefully signal to an approaching auto of its intentions. However, the fellow driving the car paid no attention until it was almost too late, but did, after several quick moves, succeed in getting by the team without any accident. As the auto came towards me I started to yell to him that it was a close shave and the fellow turned out to be George Estes, '11, with his new bride. Of course his attentions were all with her—hence the near-accident. George is fine and certainly has a nice wife. He was making for Winthrop, Mass., to spend the Fourth of July. He was glad to see me and wanted to be remembered to all the fellows.

R. E. Morse, Course VI, is now located in New York City. He has accepted a position as assistant engineer in the office of the Interborough Rapid Transit Company, being engaged principally

at present in the electrical equipment of the new subways. He is stopping at the Technology Club and in a recent letter says:

As my address here is subject to change you can put it down for the present as the Technology Club where I can always be reached. This club is a great institution, by the way, which I don't believe is properly appreciated by the fellows. It gives a chap a place to go in this town where he can feel at home and that means a lot.

Lowenberg, Course VI, is in our office and I see Harrington, Course VI, also once in a while. He is an inspector with the Public Service Commission.

It has been Mr. Litchfield's desire to have this issue of the REVIEW contain a bunch of news from Institute men in foreign countries. Accordingly the secretary sent out 38 letters on July 15 and to date has received five most interesting replies. These letters appear in full at the conclusion of this instalment of 1911 notes, as a special section, and should prove most entertaining to you. Although notices have already been mailed to you all to the effect, it may be well to mention the fact here, that the January number of the REVIEW will be specially devoted to the services that are given without compensation by Technology men for the state, municipality and community, and the April REVIEW to reminiscences of Institute life. Please consider it your duty to inform the secretary of any items of interest of this nature which you may have, either concerning yourselves or any of your classmates. *Do It Now!*

The secretary had the following interesting letter from Franklin Osborn, 2d, headed Teniente No. 1 Mine, care of Braden Copper Company, Rancagua, Chile:

When I last saw you and members of the class of 1911 it was at the banquet and reunion at the Copley Square Hotel the evening of the Pops in June 1913. I was then on my way from Great Falls, Montana, to the Braden Copper Company, at Rancagua, Chile.

We sailed from New York in company with other Americans *via* the United Fruit S. S. *Pastores*, touching at Kingston, Jamaica, on the way to Colon. At Kingston the natives are of the West Indian negro type and they speak a mixture of poor English and poor Spanish. Upon arrival at Colon we first ran up against the Latin American with his two most common words *Quien Sabe?* and *Manana.*

We looked over the work on the Canal which was then nearing completion. We saw the old French machinery, the Gatun locks at Gatun as well as the power house and spillway, then the Culebra Cut and the famous "slide," the Miraflores locks and then the old Spanish city of Panama, once the pesthole of Central America but now wonderfully healthy and clean. The Government runs the Tivoli Hotel which lies between the city of Panama and the canal but it is on the zone I think. The city proper is off the zone as I understand it. Aucon Hill lies behind the hotel and between the canal and hotel. Here, they were blasting out for the forts to guard the canal as well as for the forts on some islands in Panama harbor. We took a Chilean steamer from Balboa (the Pacific entrance to the canal) to Valparaiso This trip took in all 16 days including stops. We stopped for several hours in the ports mentioned, Payta, Eten, Salaverry, Callas (for two days), Pacasinayo and Mollendo (all of these ports are in Peru), there we stopped at Arica, Iquique, Autafogasta, Coquinto and Valparaiso. All these last ports are in Chile. The shoreline from Payta, Peru, to Coquinbo, Chile, is very bare of vegetation, and rocky. From Coquinbo to Valparaiso, the hills are lower and are covered with trees of a scrub growth and green vegetation.

From Payta, Peru, to Coquinbo, it is just a succession of bare high mountains; the Andes lie close to the coast range and in this dry climate they can be seen very distinctly and some of them are covered with snow. At Valparaiso you can see snow-covered Aconagua 60 miles away which is over 20,000 feet high. On the way down the West coast we noticed a gradual improvement in the condition of the people and the ports. The native policeman and soldier improved, also. You will know by this, then, that the Chilean cities are the cleanest on the West coast and that the Chilean is the best soldier.

Upon arrival in Valparaiso we were busy getting our baggage ashore and through the customs and getting our things checked, then to Rancagua. Railroad customs are different from those in the U. S. A. For instance, you cannot check baggage on your ticket but forward as you do freight in the States, paying a certain sum and receiving a bill of lading or receipt for it. We rode from Valparaiso to Santiago in a Pullman parlor car (no joke). The trip takes about four hours and you pass through rugged country, through the coast range with green valleys here and there until you reach the plain about 1,800 feet in elevation between the coast range and the higher Andes. Santiago is an up-to-date city and at the same time it has much to show the visitor of its age. Santiago was founded by the Spaniards about 1535 and today you can see the old adobe huts in the poorer parts contrasted with the modern business buildings in the business district and the modern homes of the children millionaires on the Alameda. The Alameda resembles Commonwealth avenue, with a broad park with trees and shrubbery extending through the middle of it for a long way. The Alameda is much broader than Commonwealth avenue.

Here you can see the snow-covered Andes and here you get an idea of the appearance of the Braden Copper Company's camps in the Andes.

From Santiago you go to Rancagua, about two hours' ride to the South, and there you find yourself in a dirty little town full of adobe houses and dirt. Here you find the terminus of the Braden Copper Company's Railroad. Rancagua, you might say, depends on the Braden Company for its life just as Butte, Montana, does on its mines. When the workers come out of the camps, everyone in Rancagua is waiting to get his money.

The Braden Railroad leaves Rancagua and runs approximately east. This railroad has a length of about 71 kilometers, is narrow gauge, and the grades are very heavy. Grand locomotives of the Shay type pull the trains up the grade to the town of Sewell (71 kilometers from Rancagua) where the smelter and concentrator are located, in from eight to twelve hours, when there is no snow or other adverse condition. Sewell is at an elevation of about 7,000–7,100 feet. The mines lie at an elevation of 7,700 to 9,500 feet two miles further into the Andes. At this point the Argentine boundary is not far distant.

Here at the smelter the problem has been to treat fine oil flotation copper concentrates in the blast furnace. This has been solved by first treating the fine net concentrates in a revolving cement pile oil fired, from which the concentrates come out in small nodules about eggsize. These are shot to the blast furnaces. Were the concentrates fed to furnaces directly there would be a heavy flue dust loss besides considerable trouble in keeping the furnaces in blast.

At the concentrator, oil flotation was first tried out in a big tonnage way on copper ore and here it was that much pioneer work in the flotation of copper minerals was done. The mill receives about 3,500 tons of ore per day from the mine. The mine is connected with the mill by Election Railroad for the handling of ore and supplies. The ore lies around the periphery of an old extinct volcano. The cone is about 4,000 feet in diameter and where there has been considerable brecciation there the ore is found principally in two large ore bodies—the Fortuna and the Teniente. Besides these two ore bodies there are several smaller ore bodies which are worked. Up to the present time only the Fortuna and several of the small ore bodies have furnished the ore but the Teniente ore body is now being developed and will be in the producing class the coming year. At the present time I am employed as mine foreman at Teniente No. 1 Mine.

We recently organized the Technology Club of Chile. The Tech men here are Stevens, '00, J. P. Chadwick, '06, R. F. Goodwin, Jr., '10, J. L. Bray, '12, "Fat"

Brown, '13, W. S. Connors, '14 and two other men whose names I don't recall just this minute.

A fine letter from J. Craig Watson has reached the secretary, with a request that his new address be noted. It is now care of Bank of Toronto, South Porcupine, Ont.

After leaving the "Stute," I went out to Nevada and worked in the concentrator of the Nevada Consolidated Copper Company at McGill. While there I had a position offered me in Northern Ontario, so I left Nevada for Canada by way of San Francisco, Oregon, Washington, British Columbia, the Canadian Rockies and the Canadian West to North Bay; from thence two hundred and fifty miles north to the Porcupine gold fields. I arrived there February, 1912, and accepted the position of mechanical superintendent for the Dome Mines, Limited. This company had under construction a forty stamp mill for the reduction of gold ore. This mill began operating in March, and has continued to do so ever since. Last year, its capacity was doubled and an additional forty stamp added. For the erection of some new plant and the operating of the mill, I had under my charge over one hundred and fifty skilled mechanics. Another of our works was the installation of an 8-inch diameter pipe line, three miles long, with two multi-stage turbine pumps each directly connected to a 125 K. W. motor, complete with switchboard, transformers, etc. The power was supplied by a local hydro-electric power company. The voltage was 11,500 volts and the frequency 25 cycles per second.

In February, 1913, I spent a month of holidays seeing the machinery on the copper mines in Michigan, the iron mines in Minnesota and the Indiana Steel works. Also, pleasure bent, a few holidays in each of the following cities, Chicago, New York, Boston and Toronto.

Next, for the Canadian Mining and Finance Company, I erected at Timmins, Ontario, several buildings on their mines, and installed a waterworks for the town of Timmins. This consisted of a 10-inch diameter water main from the Mattagami River to a one hundred foot high by twenty foot diameter stand pipe, placed at the center of the town. From this tower, eight and six inch mains were distributed round the town. At the river two steam-driven pumps, each of a capacity of 1,000 gallons per minute, were installed, and housed in a brick building. Most of this work was carried on during the winter when the temperature ranged from zero to 58 degrees below zero. Considerable of the water main ran through swampy ground which was easier to trench in winter than in summer.

In June, 1914, I took a trip to Paris, France, where I was a guest of the Société des Ingenieurs Civils. There I was shown through a dozen or more of the manufacturing plants in the suburbs of Paris, such as automobile works, water-tube boiler plants, the Hotchkiss plant where they manufacture machine guns. One of these guns was taken out on "the range" and operated—six hundred shots and more per minute were fired by these machine guns. Any person who sees these guns operated is at once struck with the hopelessness of any infantry charge against them. I also visited an electric power station with a capacity of 600,000 kilowatts. There were ten units in the station, each unit was a Parson's steam turbine direct connected to a 60,000 K. W. generator. Also, M. Effel entertained us at a champagne lunch on the top of the Eiffel tower and M. Mallet who invented the articulated locomotive (now much used in the U. S. A.), gave a lecture on these locomotives, at the home of the society. Three weeks of July, I spent in seeing the sights of Paris, such as: The gardens and fountains at St. Cloud, the chateau at Chantilly and at Pierrefonde, the palace of Napoleon at Compiègne—which at that time, I was unaware, was to be a month later the scene of a great battle. On July 14, I saw the Paris garrison 200,000 strong reviewed. I visited Napoleon's Tomb, the Latin Quarter, the Cathedrals of Madeleine, Sacre Coeur and Notre Dame, the Boulevards, the Jardin de Paris, the Ambassadors, the Bal de Tarbaren, the theatres, the Grand Opera, the Louvre, the Petit Palais. I also attended a grand dinner given at the Hotel Continental by the French engineers. I also saw other interesting places, too many to mention in this letter. I was much impressed with French hospitality, and was sorry Phil Monto ('10) and other classmates were

not along with me. I returned to England to learn war was breaking forth from an apparently clear sky, so I stayed in England. It was interesting to stay there, and hear the tales of woe told by returning travelers from the continent. Many Americans had lots of express company's checks and drafts on banks, which no one would cash for them. For a short period even a Bank of England £5 note would not buy a theatre ticket. Gold only was demanded, or no sale. In October after submarines had sunk several cruisers and battleships, and as the weather had become very rainy, I thought it wise to head for home, to the land of blue skies, and where traveling in ocean liners is much safer. Hence I arrived in New York in November. Here in the Eastern states I amused myself for three months.

This spring I have returned to the Porcupine Gold Fields, and interested myself in eight claims (320 acres) which, with some other men, I staked out the previous spring. Already, I have found some gold veins on these claims with a promising tonnage, and which have a mean assay value of about ten dollars per ton. In the near future we hope to float these holdings into a limited liability stock company. I would like to write at length on this bush life in the far North, but I have already said too much in this letter. During the past three years, the work done on the mines here has proved that the ore veins are deep seated, at least one thousand feet, and even more. The mills now operating here are getting 96 per cent extraction from the ore. Working costs range from $3 to $4 per ton. Ore values run from $5 to $10 per ton. The future of these gold fields is assured, and during the next two years there will be a wonderful development both from a financial and mineral standpoint. Consequently, I would advise any of my classmates who have an ounce of gambling blood in their veins, to get acquainted soon with the mines and prospects in these fields.

T. S. Killion gives us enlightenment on the American chance in China. He writes from Nanking Kiangsee, where he is with the Standard Oil Company:

A summons from "Happy" Adams prompts this screed and tells us to get busy and shoot some ten minutes' worth in the direction of "homeside." The aforesaid "Happy" even goes so far as to insist on our forgetting everything else—even "wife and children"—in order to put the stuff "across" for the greater honor of the M. I. T. Club of China. So Presto ! ! ! we forget the family and at the same time remind the secretary of the club that we ran down to Shanghai for the Fourth of July to see how many of the M. I. T. China Club were "off the job" in the "Bigger Better Busier and *Boosier*"—principally boosier—town of Shanghai on the Big Day. And would you believe it, there wasn't a single one to the usual first Saturday tiffen at the Carleton? Of course they were all *hors de combat* which only goes to show that they are still live wires, are real Americans, and that there are other days besides the ones on which they hand out the envelopes of election in Rogers when it is right and proper to gently slip from the Big Yellow wagon.

The Fourth is certainly *some* day in Shanghai for the Americans, and it is mighty fine stuff to get in with a real crowd of Americans on that day because they are surely *there* with both feet with a "Here's to the Day" no matter if they are oil men or something else for the rest of the time. And, believe me, it certainly is fine to see a gang of Americans together even if it is only now and then. Outside of the big cities they are few and far between and considerably in the minority in most of the ports, although along the Yangse River ports the U. S. A. gunboats generally have a fine crowd on board. After that I guess we still have to hand it to the Slandered Isle for the importation of Americans and American business, and in fact it is the only American organization out here that shows much speed at all. They have a mighty good crowd of men in the field from every college you could imagine and every now and then a new lot are "consigned" here from N. Y. It is really the biggest American trade influence that is felt out here and everywhere one goes there are signs of the S. O. "spreading the light" among the "heathen Chinee."

At the present time other American interests are small and engineering work here will never be done by Americans until it is financed by American capital. Other nationalities which furnish the capital generally see to it that the organization and the

material for the job come from the country where the money comes from, and that it is apparently the first principle for engineering work, especially railroad work. An American or American goods are not wanted on a job where the capital is from another country and the men who have been on such jobs never found it worth while to stay around. That is probably why there are so few M. I. T. men in China, but they might just as well stay "homeside" as to try to break in out here if it isn't on a job that the capital is American. It might "be done" in a few isolated cases, but a man coming out cannot be too sure of the game he is going in before making the jump. It doesn't follow out here that because a man is a better engineer and can furnish a better bridge cheaper than someone else that he gets the job. Trade interests, capital and politics are so linked up that "a rank outsider" can hardly ever butt into the game that is played by any other nation.

Engineering work for the greater part has been confined to railroads, and while there is probably a good rake-off in that, the commercial game looks more attractive and one for quicker results. There is no doubt but that there will be a goodly amount of other engineering work done in later years, but it will always mean that the capital will come from other nations and that the work will be done by those furnishing the capital. There has been practically no real big mining work ever done out here and the Chinese are rather backward in giving over their last big plum for outside exploitation. Outsiders are generally interested in looking on China as holding immense reserves of all kinds of ore ready for a tapping, but for the greater part it will mean years of work in establishing communication routes before the country is well opened up, and even then it is highly probable that the conditions and restrictions will greatly retard a free and rapid development. The Chinese are perhaps slow but they have been handed a few bitter pills in their deals with "foreigners" and it has made them a little wary and perhaps suspicious in their dealings on new propositions with outsiders. "China for the Chinese"—as much as possible—is the idea, but the fact that they are a borrowing nation has a great influence. If ever they get the internal affairs of the country organized—and they are "on the way"—there is no getting away from the fact that the revenue would be more than sufficient to tell the other lending nations to "go to," but the trouble out here has generally been that the provincial and central government relations were not well defined and a joyful system of "squeeze" or graft caused a considerable lightening in the remittances collected for the government. Conditions are gradually becoming better, and it is more than probable that with better communications and revised organization that the country will land "on its feet." What they need real badly is some more "really *big* men" to take a hand in the game and there is all kinds of room later on for the foreign trained Chinese although it must be said that they have been pretty well "shelved" to the present time. Anyway they have been too few, but with greater numbers and with real clever ones they certainly will have their day and probably do the greatest amount in putting China where she should be.

I must say that I have really enjoyed the places and the experiences which the last three years have brought out here, although my work has not been of an engineering nature. The commercial game is certainly more attractive than most of the engineering work which I have seen out here and it, perhaps, has the advantage of giving a broader field to work in. Again the returns compare very creditably with those from engineering work, although one does sacrifice considerable out here by being stationed in some parts of the country, and it is only right that the loss should be made up in some other way. After three years of living in any place from a Chinese village to a treaty port one is generally a little keen to see what "homeside" looks like again and if the "Beautiful Boylston Blonds" still trip along Boylston and Tremont streets.

Well, ten minutes are up, so we'll gently slip this stuff into an envelope and get it on board of the *Mongolia*—which by the way is a real *American* ship although it looks as if the gentlemen that have charge of the "indoor sport" of making laws would put a crimp into American boats on the Pacific with as much pleasure as they shoot their long drawls for publication in the *Record*. One of the greatest sports out here is to watch American politics which are understood by most people about as much as a "bally cricketer" understands a baseball game.

Polheim rejoices that he stands again on his own native soil, He writes:

Your request of July 14 has just reached me and I regret on your account that I am no longer outside the U. S., but on my part I thank God that I am once more in His country.

I left Canada about the first of May, thinking it wise to get out while I had the where-with-all to do so with. I had been in the contracting and builders supply business with another fellow up there and had done pretty well until the war started and it certainly put the kibosh on all business and ours especially. When the war started we had about seventy thousand dollars worth of contracts on our books, a week later we didn't have a thing; all contracts were cancelled.

We worried along until the first of March when, as I say, I thought it behooved me to get out. About all I heard up there the last six months was "Tipperary" and the Scottish bag-pipers. The troops there were the finest body of men that I ever saw, most of them being men of the middle and upper classes.

Hundreds of my friends up there have gone to war. I used to hear from them regularly but one by one they have stopped writing until now I hear nothing. I suppose it means that they are all gone. I don't doubt it, as they have suffered very heavily; but knowing this and having seen so many going off brings the war very near home and makes me realize the horror of it more fully, probably, than you down here do.

I could write you at great length quoting you letters from fellows over there, but you have seen the same things in the paper.

At present I am working on the construction of an ore roasting plant for the Wisconsin Zinc Company and expect to take charge of the operating of it when completed. I sincerely advise any and all young fellows to keep as far away from Canada as possible until the war is over at least.

Yeaas by Jove, thems my bally sentiments y'know.

We are glad to get a word from Ove Collett, who is now in Norway and who writes from Grömegate 6 Kristiana as follows:

Your letter of July 14 at hand, I am glad to send you a few words about myself, although I suppose none of the class will remember me.

You will have to excuse my English as I have had very little practice in that language lately. It goes faster than it comes.

After having left Tech in the winter, January, 1911, I was engaged at the research laboratory of the American Steel and Wire Company at Worcester, Mass. I liked the place awfully well (having been the previous winter in a place called Gary, Ind. —a place that I won't describe to you), and the chief of the laboratory was a man that I appreciated very much and whom I should be glad to meet again. I had bad luck two days after having started work. I got pretty ill with rheumatic fever, and had a pretty close escape. The doctors managed it all right, however, and after weeks of fever and sufferings at Newtonville the doctors decided to send me back to the old country again, very much against my own wishes. Here I am getting along pretty well in the electrochemical industry that is prospering in Norway at present in spite of the most foolish lawmaking you can imagine. I am at present first assistant to the director of a great concern called *Det norske akitieselskap jor electrochemist Industri, norsk Industri Hyoptek banc,* which is utilizing waterfalls, mines and electrochemical processes in Norway. Next year I am going to start for myself as a consulting engineer on similar matters.

We understand that W. Seligman is now in the wool business, but we do not know whether he tends the sheep or combs the wool. However, we expect to have more details from him for a later issue.

Enter the ass. (this doesn't sound just right, but remember, there is a period after the *s*) secretary, being the inauguration of

above mentioned gentleman in the realms of writing copy for publication. Please excuse any transgressions of the noble art.

On account of a very bad accident in which O. B. Denison was seriously injured, the task of correcting proof for this issue fell on the shoulders of the assistant secretary, so charge all mistakes up to him.

A word as to the cause of the accident would not be out of place here. On Friday, the 15th of October, Denny's orchestra was furnishing music for a party at the Worcester Country Club, and at the request of those in charge, Denny had arranged to play until one o'clock if transportation was provided from the club down to the hotel. One of the members of the party then agreed to take the orchestra down in his machine.

Denny and four other members of the orchestra were in this machine, which proceeded to do a little racing with another auto of the party. Just after making Barber's Crossing and taking a curve, the front wheel snapped off and the whole party was thrown out of the machine, and then it turned turtle.

Four of the party suffered fractured skulls and other injuries, Denny being one of these. He is now in the Worcester City Hospital, with a very bad case of fractured skull and internal injuries.

The latest news we have in regard to Denny's condition is most hopeful. The assurance is given us today, October 26, that he will in all probability be restored to his former health and activity. We were told that he had about one chance in a thousand and he took it, and is now out of danger.

News has just come to the secretary of the death of Joseph Carey Knight who was connected with the class during sophomore year in Course I. He died suddenly, of pneumonia, on the 19th of April last. At the time of his death he was a construction superindent for the George A. Fuller Company, in New York City, and is said to have been making an excellent record.

Address Changes

Charles M. Barker, The Aurora, Worcester, Mass.—G. Arthur Brown, 673 Chestnut St., Manchester, N. H.—A. T. Cushing, 508 West Broadway, Louisville, Ky.—Ove Collett, Grömegate 6, Kristiania, Norway.—D. N. Frazier, 806 South Cecil St., West Philadelphia, Pa.—R. E. Morse, Technology Club, New York City.—Theodorus Polhemus, Wisconsin Zinc Co., Platteville, Wis.—H. L. Robinson, 65 School St., Fall River, Mass.—E. D. Van Tassel, Jr., 41 Hancock St., Stoneham, Mass.—John C. Watson, care of Bank of Toronto, South Porcupine, Ontario, Canada.—J. O. Greenan, Sarta Mining Co., Masonic, Calif., via Sweetwater, Nevada.

1912.

RANDALL CREMER, *Sec.*, care Snare & Triest Company, Cruz Grande, Chile, So. America.
JOHN E. WHITTLESEY, *Asst. Sec.*, Norton Company, Worcester, Mass.

I understand from "Ike" that this is to be a "scattered" number of the REVIEW. Well, I have integrated the old '12 gang in the following limits; note the four dimensions. North—Toronto, Canada; South—Apoletti, Rio Negus, Argentina; East—Germany, and West—California, although if I remember rightly Art Campbell is in the Philippines.

J. Howard Catlin writes:

> My exile here in Canada working on the structural side of the new concrete factory Eastman is building here, has been made much more interesting by the war. It seems rather close as your newly made friends leave one by one for the front. Canada isn't bad, but it makes one realize that there is no country like the U. S. A. when one leaves it for a while.

I had a letter from Fernando Lavenas who is in the irrigation service in Argentine Republic. Also, to show his real class spirit, enclosed a curious looking draft for his REVIEW subscription and class dues.—George Forester, after recognizing my initials on a suitcase, came up and spoke in the Worcester station. He promised to send me a postal he had from Reiman who is studying in Germany but the young lady arrived and I guess he has forgotten it.—From California, George L. Uman writes as follows under heading of "Civil Engineer and Surveyor, Marsh-Strong Building, Los Angeles:

> Just a little news for the boys. I was married October 9, 1914. On July 26, 1915, I received an eight pound boy. According to "Teddy" that is about 94 per cent efficiency. Not so bad.
>
> Undoubtedly many '12 men will visit the fair. Would be glad to say "hello" to those passing through Los Angeles.

"Ken" Cartwright was married October 15 to Miss Emma Louise Burwell of Wakefield, Mass.—J. H. Pratt was married September 1 to Miss Priscilla Ryder of Fairhaven, Mass.—Eugene Baker, who studied architecture at Penn. after leaving the "Stute," won the Stewardson memorial scholarship this year. He was married September 20 to Miss Doris Devlin of Philadelphia, Pa.—At the Belmont Unitarian Church, Miss Marguerite Brooks, president of the Vassar Athletic Association last year, became the bride of Gurdon I. Edgerton. Mrs. Edgerton is a Vassar graduate, 1915.—I understand that Busby is now a proud father.—The Chicago bunch has an organization almost as good as the German Army, but listen to Vaughn: "You had oughta been with us on the annual summer outing of the Northwestern Association!" Henry Babcock took the '12 delegation in his National "40" at least until

they broke the frame and Bab had to crawl back to the city. The rest finally reached Antioch when they were royally entertained by R. E. Schmidt, '87. They returned Sunday, the next day, and agreed they had one good time. The car which Vaughn was in on the return trip only twisted off the driving shaft. Who said "jinx"? He also says L. A. Bailey is in business for himself and seems to be prospering.—Bill Herron, who was with us for a short while in Course II, and afterwards returned to Dartmouth, is raising oranges in Florida. What won't a Course II man do for a living?—As for myself, I am now with the Norton Company in Worcester, Mass., and expect to have an assistant secretary before long.

The secretary has just received notice of the loss of two of our classmates: Revere B. Pulsifer, who died early in the morning of September 29, 1915, in Bridgeport, Conn., and Frank D. Bishop, who passed away at his home Springfield, Mass., of heart failure.

1913.

F. D. MURDOCK, *Sec.*, University Club, Hartford, Conn.
A. W. KENNEY, *Assoc. Sec.*, M. I. T., Boston, Mass.

It was the intention to devote the class notes of this issue (in conformity with the other classes) especially to news of men in foreign countries. Owing to the difficulty of communication now, and the fact that many of the men from whom we would particularly want to hear are fighting in Europe, we have not made a signal success in that line, although we have plenty of domestic items. For the January number, a feature will be made of men who are working for the state or city; and the April REVIEW will be a reminiscence number. We would be very glad to receive as much material as possible for these "specials" and everybody is invited to dish in. If you won't write about yourself, write about someone else.

Well, summer is past, and vacations are over. The monthly dinners at the Crawford House opened up with a grand feed, and the annual class banquet will soon be here. After a lapse of four months since our last "chatter," we have naturally accumulated quite a bit of matrimonial data. R. C. Bergen, III, is married and has a son, Robert Chase, a future Tech man and "some boy." Bergen, Sr., has had quite a varied experience since leaving the 'Stute: first with the American Smelting and Refining Company, then a year with Roessler and Hasslacher Chemical Company, and now he is one of the editors of *Metallurgical and Chemical Engineering* in New York. Through all these adventures Tech training has backed him up; and, as he says, "it fits you for any kind of work."—Our only June wedding this year was that of Miss Adelaide E. Breck to our impressive colonel, Edgar W. Taft, VI.

A soldier's uniform always makes an impression, of course, and the uniform wasn't the best part of Colonel Taft.—Violent headlines about a "Dam Engineer" came out in Akron, Ohio, papers, and only because Miss Mary Cackler was married on August 10 to Ralph Algers, I, who is one of the engineers at the Akron water works dam.—Our great track manager, Max L. Waterman, II, has also joined the happy throng. Miss Bertha Nickerson of Simmons College became his bride on August 31; and the couple are now living in Bridgeport, Conn., where, according to the *American*, "Mr. Waterman holds a responsible position with a large manufacturing concern."—Announcement is also made of the marriage of Miss Ida M. Johnson to Henry C. Harrison, VI, September 7, at Colorado Springs. The last we heard, Harrison was with the Western Electric Company at New York.—Our handsomest classmate is now a married man. Miss Gladys Parker was married to Jimmie (otherwise known as James Gordon) Russell, September 17. The honeymoon was spent in the White Mountains, and the happy couple is now back at Annapolis where Jimmie is doing his part to give us a scientific navy.—Phil Terry's, X, engagement was announced in the last number. He was married on September 19, and Mr. and Mrs. Terry are now back in Babbitt, N. J., where Phil is an expert in soap-making and allied industries.—Our very latest by special wire is news of the marriage of Miss Harriet C. Wedgewood to Edward Cameron, I. The bride is a Radcliffe girl, and the new home will be at 19 Boston street, Somerville. —One of the fellows hit on a unique way of celebrating the Fourth of July. On that day the engagement of Miss Mildred F. Wildes to Alex. Morrison, X, was announced and he considers it a good "safe and sane" celebration.—John Hession is another proud man and the lady is Miss Anne M. Splane of Manchester, N. H., according to a brief note from John dated September 27. The best wishes of the class go to all these happy people.

The glorious class of 1913 now has a real Ph.D. all its own. Dr. Charles L. Burdick, III, received his doctorate at Basel last July after only one year's work abroad. Burdick received the master's degree in chemistry at the Institute in 1914 and got into Germany just before the war. Most of his work was done at Berlin, although he took the examinations (and the degree) at Basel. Burdick certainly is to be congratulated and complimented on the speedy way in which he has added titles, and we hope to get a letter from him later, giving us some news of Germany.—The class has several candidates for the honors Burdick has achieved. Leon Parsons, V, is working in chemistry at Harvard and publishes a new atomic weight every month or so.—Bill Horsch, XIV, who was assistant in electrochemistry at the Institute last year, has gone to the University of California, where he is working for his doctorate under Prof. G. N. Lewis.—Three men are hoping the Institute

will be kind to them some day, and grant them the gracious privilege of calling themselves doctors—Walter Whitehead, III, is working in Geology and Williams, V, and Kenney, X, in chemistry. —Fred Lane, X, is now at the University of Maine, where he is teaching organic chemistry.—Speaking of education reminds us that the Y. M. C. A. educational department in Boston suffered a fearful blow this fall when "Hap" Peck, II, decided he couldn't favor them with his presence, as they had planned.

As a substitute for letters from abroad we are very glad to print one from Manuel A. Hernandez, I, which, though written in New York, has all the interest of foreign travel. He says in reply to a note from the secretary:

Since I left the school I have had so many and varied experiences that I don't know just which kind you would be interested in. As soon as I graduated I went to Mexico, did some business for German houses, especially selling arms and ammunition and I even went as far as to start organizing a little cavalry regiment. I have had one or two exciting times and have been in close touch with Mexican politics during the war-time administration in Mexico from the time I graduated up to the time Ex-President Huerta resigned. My family went to Spain and I stayed in New York; and shortly after, I took a study trip to South America to find out just what the opportunities of the American manufacturer are in Brazil and Argentine. I visited several cities in those countries and also Uruguay and stayed for about four months in Buenos Aires. I have a pretty good idea of what kind of goods are saleable down there and if you are interested in that business, why, I might sell some stuff for you.

I am now here trying to get representations from American manufacturers and I believe I have good prospects of succeeding.

You want to notice that I have had experience in everything but engineering.

One other good newsy epistle arrived, this one from Alabama. It may be excusable to print it in our foreign section on the plea that part of the scene is laid in Ontario. F. C. Weiss, VI, is the contributor:

It has been some time since I have ventured a line to the "bunch," in fact, the work here has been so engrossing that I have wofully neglected my correspondence. On receipt of the July REVIEW with its wealth of '13 news I decided to come across with a line or so, even though I cannot qualify for the vital statistic column.

Last December I returned to work with the Alabama Power Company after an eight months' stay in Cornwall, Ontario, where I was in the employ of the Stone & Webster Corporation on high tension transmission construction. While in Canada I had the good fortune to run across H. C. Randall, Jr., and T. J. Lough, both well known as hard workers and very versatile. However, the class must needs spend a week-end in Montreal with these boulevardiers to understand their wonderfully developed natures. You can imagine how handicapped I was between Henry and his lifting eyebrow and an apt French phrase, and Tom with his hearty laugh and rollicking Western ways. (By the way, have you seen Tom's new stationery? He is a county engineer of ——— County and also undertakes private work.)

Since returning to Alabama I have been engaged in all manner of work, principally in transmission line construction and maintenance. I have specialized in this particular branch of engineering and have found it an exceptionally good "book" from which to glean the science or art of general engineering practice. Alabama is a very good state for an engineer because of its great mineral wealth and the abundance of "white coal." I find that as usual Tech men are in the fore, and there are many of the later grads making excellent records here; in fact, they are so darned busy making a name for themselves that they don't have much time to get together.

However, the S. W. Association of M. I. T. has its home here and the crowd gets together several times during the year.

I notice from the REVIEW that, as usual, the electrical engineers are the hardest workers and give less time to "Mexican sports." This is of course as it should be, but I for one would like to hear from my companions in Triple E. I am sure at the five-year reunion you will find more of them among the "established" citizens than in any other course.

My only apology for the above is "Look what we went through."

Along with the letters, we received an impressive document from the Supreme Court of the State of New York, an order changing the name of "Bill" Katzenberger, VI, to William de Y. Kay. Kay wished this change noticed in the REVIEW, as the best way of notifying the fellows; and remarks that it will doubtless be as much relief to them as it was to him.—Another correspondent we are all glad to hear from is Heine Glidden, IV, who at last yields to our importunities to supply some dope on the Course IV men. He reports as follows:

I am now with Coolidge & Carlson, 89 State street, Boston, as an architectural draftsman. Have been enjoying the work there of rebuilding the Wellesley College Dormitory which burned in 1914. Of course Ed Bridge and I have to go out to see how the building is getting along every now and then, in spite of the fact that he is married! Oh no! I am not—yet, and there's no hope in sight.

Louis Rosenberg was in a San Francisco office for a while after an adventurous trip from Portland, Oregon, to Frisco as cook on a freight steamer. Now we hear rumors from Des Moines of wedding bells soon to ring for him.

W. W. Barrows is still in town with Blackall, architect; and Gordon Robb is with MacLaughlin. The rest of the crowd I don't hear from once in a dog's age,—perhaps you are more fortunate.

We were very glad to get letters from several of the men telling of their rise in the world. Arthur W. Carpenter, X, is now assistant superintendent of the Akron Water Purification plant. Carp left Alliance last July and is now living in Kent, Ohio. The new job (should we say position?) is reported to be very satisfactory.—Harry G. Burnham is now living in Providence, where he is manager of the Factory Branch for the Metz Company, manufacturers of automobiles; and he adds they are enjoying a very successful season.—"Wood" Selfridge, II, has left the American La France Fire Engine Company at Elmira, where he was experimental engineer. He is now copper mining in Salt Lake; and, judging from the increasing value of copper, this looks like a progressive move on "Wood's" part.—Arthur E. Bellis, V, is no longer at the Institute, but is metallurgist for the New England Westinghouse Company, at Springfield. His particular care is the steel that goes into rifles; and in these days that must be a rushing business.

A few more address slips straggled in this summer. H. J. von Rosenberg is constructing engineer at Yoakum, Texas; and Allan S. Beale, I, is still with the Lucius Engineering Company in New York City.—Any one wandering around the northwest corner of the country is likely to run into Kirk Hillman, VI. He is man-

ager of the Wagner Electric Manufacturing Company, with office at Seattle and also represents the Diehl Manufacturing Company of Elizabeth, N. J. His territory covers Washington, Oregon, Idaho, Montana, and Alaska.—One of our life-savers is heard from. William C. Purdy, VII, is in the U. S. Public Health Service stationed at Cincinnati, and is biologist in the Ohio River Investigation.—The secretary had the pleasure of spending a Sunday with Don Van Deusen, II, at his home in Hudson, N. Y. Van promised that it would be a "feast of reason and a flow of soul." Of course, it was all that, and more; "soul" wasn't the only thing that flowed. Van is still associated in business with his father.—H. W. Dew, Jr., III, is back with the Anaconda Copper Mining Company at Great Falls, Montana.—Alan Hay Means, XII, is now at Silver Bell, Arizona, via Red Rock.

B. B. Tremere, Jr., III, left Bingham, Utah, last June and is now in the Testing Department of the Mine Lamotte Company at Mine Lamotte, Missouri. This is a very old lead and copper property which is being re-opened on a large scale, with much promise of success.—William S. Black, III, is no longer in Aurora, Nevada, but is superintendent of a zinc property with address, Superintendent Mobile Company, Jean, Nevada.—F. B. Morton, X, has been assistant chemist in the laboratory of the Nonnabo Chemical Company, Providence, R. I., since last March. They are manufacturers of nitro-cellulose products, so Morton has no trouble keeping busy.—Alex Pastene, X, who was with the same company, is now in Springfield, N. J., chemical engineer in charge of one of the shifts at the Chemical Company of America. Al's interest is in making aniline, nitrobenzene, etc.

A despatch from the secretary on his travels arrived at a late hour, and consequently his matrimonial news came too late to be placed in the regular column: He contributed these precious bits of information: The engagement of Stanley W. Parker, III, to Miss Helen Louise Baker is announced.—Jimmie Russell, II, writes that he is at home at 248 Prince George street, Annapolis, Md., to any '13 men who are in the Naval Academy town.—The marriage of Miss Elizabeth T. Johnson and Gordon Howard Robb, IV, took place October 18 in Salem, Mass. Mr. and Mrs. Robb have gone on a wedding trip to the White Mountains, and on their return will reside in Salem, Mass.

Our best wishes go out to these happy persons.

The call of his home state was too strong for Tom Byrne, IV, so we find him in Dallas, Texas, where he is estimator and office engineer for the Hedrick Construction Company. He is quite enthusiastic over his prospects.

Just to have it still known that the class has an executive organization, Larry Hart, XI, president, traveled, for this reason, among other minor business ones, to Texas, where he and Al. Ranney, I, vice-president, held a class meeting. Part of the busi-

ness seems to have been to give the secretary ——— for his absence. Al. acted as secretary and here are his expurgated minutes.—"Meeting called to order by Pres. Larry Hart at 11.30 p. m. In the absence of the secretary the minutes of the last meeting were recited from memory by the vice-president. The question of a quorum was brought up and in the discussion that followed, enough of the activities and whereabouts of our classmates were talked about, that it was decided that a quorum was present in discussion if not in fact.

"Roll call:—Was covered pretty well in the discussion mentioned above.

"Old business:—There is no old business; all that was left behind, June 10, 1913—everything has been *new* business since; or rather prospective business.

"New business:—There is a world of it down here and the trails of the president and vice-president crossed here while in search of same, hence this meeting.

"Reports of Committees:—We looked in vain for them, but as usual they had 'nothing to report'.

"After several hours of cussing and discussing (Al. says much had to be deleted in this report) the meeting was adjourned until June, 1916, our Three-Year reunion, in Boston, where we look for some big Get-Together."

(Signed) LARRY HART,
AL. RANNEY.

August 24, 1915.

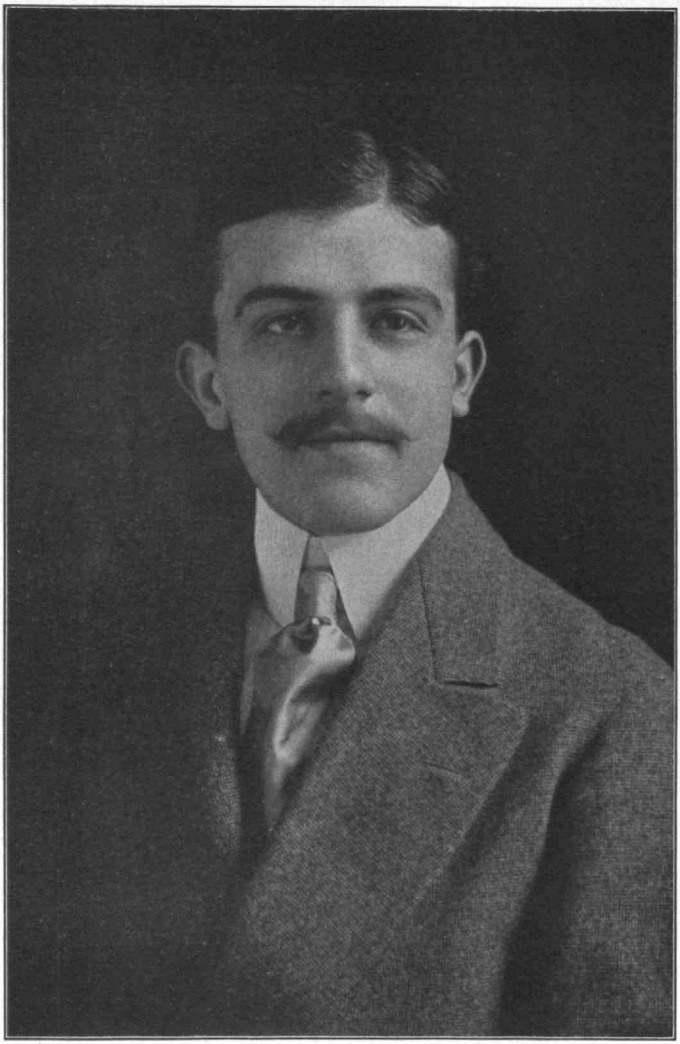
Please note the emphasis on our triennial, in June, 1916. Considering the late hour at which the meeting started, we venture to approve these minutes.—Larry states that Al. is a real engineer, building bridges, railroads and dams that would do anybody credit. Larry is making an extensive business trip, visiting the main cities of the Mississippi valley and Texas. A short while ago he was in Pittsburg.

It is with deepest regret that we publish the loss of two of our classmates. News has just reached us of the death two years ago of Everard F. Finley, VI, of Allston. Finley was with us the first two years; and will be remembered by many. His death was due to Bright's disease.

Dean Burton kindly wrote for us the following appreciation of Henry Lamy, the news of whose death came this fall.

HENRY LAMY

Henry Lamy, a graduate of the mining engineering department in the class of 1913, was killed last month while fighting with his regiment in Champagne. A cablegram from the father of Mr. Lamy announcing the death of his son on the battlefield was received by Dean Burton on October 14. Two days later a letter



HENRY LAMY, A.B., '13

was received from Henry Lamy which must have been written a few days before his death. In this letter he said that he had been at the front since April of this year; had been promoted to the position of sergeant, and was about to receive an appointment to second lieutenancy. He said the fighting was very severe and he did not think it likely that he would survive.

Henry Lamy was the only son of Mr. Lucien Lamy, a prominent mineral broker in Paris and the official agent of the Calumet and Hecla Mines, and it was through Colonel Thomas L. Livermore, who was a personal friend of Mr. Lamy senior, that the young man came to finish his education at the Institute.

Henry Lamy had already received his bachelor's degree at the University of Paris, and was admitted with advanced standing to the Institute, completing the regular course and receiving his degree in June, 1913. During the period that Mr. Lamy was at the Institute he lived in the family of Dean Burton and they all became very much attached to him and have kept up a constant correspondence with him since he graduated. According to the regulations of the French Government he was obliged to serve two years in the French army, and it was while serving his second year that the European war broke out. He was immediately sent to the front and after forty days of service in the trenches he was badly wounded by an explosion of shrapnel. He was transported by an American ambulance to a hospital in Paris. In a month he had recovered sufficiently from his wounds to be transferred to a position in an ammunition factory, although he did not have the use of his left arm. During this period he wrote a number of most interesting letters to his friends at the Institute, one of which was read at a meeting of the Walker Club.

Mr. Lamy was a fine type of the aristocratic young Frenchman who have gladly sacrificed themselves in the service of their country.

1914.

CHARLES PARKER FISKE, *Sec.*, 99 Aspen Avenue, Auburndale, Mass.
ELMER E. DAWSON, JR., *Asst. Sec.*, 28 Washington Avenue, Winthrop, Mass.

What ho, you men of foreign lands and foreign birth, where are you for whom this issue is set aside? We have received few replies and little word to tell us that you are enjoying your locality and work. We hope that those who could not, or—excuse the thought—would not, answer our appeals for news, will brace up before the next issue and send us a word about themselves. But let us cry no longer and give you the little we have heard.

A. E. Gerald Collins writes an interesting letter from England:

After leaving Tech I spent two months in Denver looking out for some of my father's interests. Just before the war started I went to South Dakota with the

New Reliance Gold Mining Company, where I had a nice busy time. Here I ran across Charlie Hill, 1913 post-graduate. Then after a long period in which I was trying to make arrangements to get away, I came back to my home country to see if I couldn't mix up in the big squabble.

I arrived here in April, just before the *Lusitania* went down, and later joined the Inns of Court Officers training Corps, cavalry section, as a private. Inside of a month I succeeded in coming in close contact with a horse in a fall and as a consequence spent three weeks in bed and five more on the light duty list. Soon after I was again in good shape I was accepted for a commission in the Royal Engineers and on July 25 was duly gazetted as a second lieutenant.

Since joining my unit I have done a good deal of bridge building, principally of the trestle, sling and pontoon type, and other practical engineering work, in addition to the usual drill routines. It is quite interesting—so different from the infantry—and not particularly hard work. My specialty, or rather specialties, are trench digging, wire entanglements, bomb and grenade throwing, and demolishments.

About a month ago—we being the next in our division to go out—we were divided into three companies in order to make room for a great many new men, the result being that it will be now several months before we are sent into active service. It has been decided to give me the nice (?) job of training our 500 recruits in rifle manipulation and shooting. As these are rather important phases these days, I decided to go to school again and took a three weeks' course in rifle instruction at the government musketry school at Strensall. Having replenished my knowledge along this line, I am now back to give the new men a good dose of it. At the same time we must teach them their drill and the engineering work, which altogether means a busy time for everyone.

We are mounted as far as the officers are concerned, with about one fifth of the men as drivers, mounted orderlies, pack mule men, etc. However, we officers do not really get very much riding, just on the march and an occasional joy ride after tea.

Southwell is a beast of a place—not even a picture show—but luckily we are up at 5.30 and are ready for bed when 10 o'clock blows. The officers are an extremely decent lot—probably the best crowd in England—so we enjoy ourselves very well. Still, whenever we get away for any reason, it is mighty hard not to exceed the speed limit.

Well, I can only wish everyone good luck, and hope to be where the real work is being done sooner than I expect to now.

A good letter, Collins, and we all wish you the best of luck should you get in the thick of it.—"Hen" Merrill sends a good word from China:

I am assistant engineer for the Kwangtung Conservancy Board, which is trying to work out a scheme for the prevention or control of floods in the Si Kiang or West River. I am the only person of English-speaking race on the works. Our chief is Captain Olivecrona, a Swedish army engineer, and the other assistant, Carl Kleman, is also Swedish. The rest are all Chinese.

I am in charge of a party at Wuchow and am making soundings and current measurements there. Wuchow is on the Tropic of Cancer line, and is very hot just at present, although I am told that occasionally the thermometer falls as low as the freezing point.

The annual flood has just occurred and it was the highest on record. The water rose to 79 feet, 6 inches, above low water mark, and that is some rise! We were driven out of the Customs Mess where I am living and had to live in Chinese house-boats for three days. The loss of life by the flood was appalling—estimated to be between five hundred thousand and a million. A big fire at Canton, set by robbers and looters, who had taken advantage of the flood and now wished to cover their tracks, drove five thousand families out and caused an additional loss of life.

It was quite a sorry sight to watch the houses floating down river, with here and there a body of man or beast, but that is nothing compared to the damage evident

now that the flood has fallen. Whole rows of houses are either entirely gone or have collapsed and the narrow streets are filled with mud and silt deposited by the river. This general filth means an epidemic of malaria, which is already under way. The great destruction of rice fields means a small famine, but relief boats are coming and this will probably be averted. Here's hoping that I shall be able to be with you for the 1917 gathering, when I expect to be back in good old Boston.

"Chet" Ober is still decidedly on the job and writes as follows:

As you can see from the stationery I am still with the Coast Survey and find the work interesting. There is ample opportunity for travel. Starting over a year ago in Portland, Me., the work has taken me to New Bedford, Mass., Newport, R. I., Washington, D. C., Norfolk, Va., Key West, Fla., and Havana, Cuba. Last March, the party came back north and in New York, while on leave, a little reunion was in order. There were Buck Dorrance, Ralph Salisbury, and myself of '14, Gene Macdonald of '13, and last but not least, "Pa" Coburn. I hated to leave them for no one knows when I shall see them again.

Then came the big trip across the continent for the wild and woolly west, ending ultimately in the theoretically frozen north. There were stopovers too numerous to mention. It is sufficient to say that I used an entire month in going from Washington, D. C., to Seattle, Wash., and certainly enjoyed the expositions at San Diego and at San Francisco. In Los Angeles, I found Bob Nichols of '13 and together we painted the San Diego exposition a brilliant red. In Seattle, Charlie Shaw was there with a big 1914 right hand greeting. Charlie is now in Wrangel, Alaska, about eighty miles north of Ketchikan, my present location. Both Charlie and I shall probably be in Alaska until October. We are using a wire drag to find and locate pinnacle rocks and uncharted shoals. At the end of the season we may be ordered back East, or we may spend a winter in Seattle, or may even be sent to the Philippines, with the opportunity of returning to the "States" through Europe. At present, it is mere guesswork to foretell our next location.

It may be of interest to note that it is not necessary to be at Revere or Nantasket in order to enjoy a swim. We get our daily plunge here. To be sure, the water is cold, 57°, by the latest electro-thermal measurements, and we do not stay in very long, but a swim is a swim for all that!

Your prompt reply received a warm welcome, for letters are at a premium in this country. Tell me, is Buck really in ill health, or did his constitution become somewhat weakened in favor of a trip to Canada? Possibly there is a young lady in the case who caused Art Peaslee to come to Boston with Bemis Bro. Co. A letter from Pa Coburn says that Phil Morrill is also in Boston with Bemis Bro.

In spite of our distance from civilization, we are able to keep more or less in touch with outside happenings. Tom Duffield has started housekeeping, and has just received a raise in pay. Tom feels "just like a king." An extract from Pa Coburn's letter may not be amiss, although you may have heard from the fellows mentioned therein: "Got a letter from Charlie Fox dated June 17 in Athens; they had a fine voyage over, about twenty days. I don't know as you had heard that Charlie and about twenty-five others went over under Red Cross, Rockefeller Institute auspices to have a try at clearing up Servia. We hear they are very successful and will be moved on to other fields soon.

"Peb Stone is down in the Maine woods says; he did not know there were so many flies."

Charlie Shaw is still working hard near Wrangel, Alaska. Charlie writes: "If the hard work keeps up, I shall be as fat as a toothpick by October. My mustache and full beard are assuming gigantic proportions, causing my face to resemble that of the Tzar, or King George, or a German diplomat."

There are several items concerning lads who were in the class of '14 either continuously, or discontinuously. H. H. Griffin was married recently, and is living in Hackensack, N. J. George Whitwell is in Butte, Montana, working for the Anaconda Copper Company. "Rube" Arey is in the Philippines, on one of the U. S. Coast Survey vessels.

Incidentally, the Coast Survey has another recruit from Tech, in the person of A. C. Witherspoon, '15. I do not know him, but it goes to show that the service is drawing men from a good school!

Even in Alaska, there are Tech reunions. In Ketchikan, I met Walter F. O'Brien, '12, who at present is with the Sullivan Machinery Company, Juneau, Alaska. There was a unanimous decision that Tech should have a reunion. With Kearns, Tufts, 1914, an officer in the service, whom we elected an honorary Tech man, the three of us had a banquet with all the trimmings, from soup to speeches. After the big feed, we repaired, with no little display of spirit and enthusiasm, to a dance (held in our honor). Please do not misconstrue the meaning of the word "spirit" as used above!

Apparently you are getting good experience in your work in the office. For the past week bad weather has kept us inside, so that we have had a good taste of office work ourselves. During the storm, we rescued a small power boat which had broken down. Besides this, our rescue list for the present blow includes two barges which had broken loose from their moorings. Although rainy, rough, and windy, the rescue work was exciting.

Recently, a passenger ship struck an uncharted rock near here. Within 24 hours after hearing of the accident, our party had made a run of 40 miles, found the rock by means of the wire drag, and cabled the news to Washington. The rock, 21 feet below the surface, and with water 300 to 600 feet deep all around it, is what is known as a "pinnacle rock." Without the wire drag, it would be practically impossible to find such submerged dangers.

According to latest advices, we will be in Alaska for two months more. When we reach the "States" we shall probably spend a week or so in becoming accustomed to the present ways and existing conditions of civilization and culture!

If "Chet" continues his splendid work furnishing news he ought to be given a medal, if not made an honorary secretary of the class. Perhaps he would prefer the former! At any rate we are deeply indebted to him for his valuable and interesting information and point him out as a bright and shining example of that lofty eminence to which the letter writing proclivities of all 1914 men should aspire.—Newell Thompson is connected with the Standard Oil Company of New York in the Orient. He is at present occupying a position of considerable responsibility in Peking.—Harold Fay is in Japan.—"Count" Eric Mason is terribly busy somewhere in South Africa, but no one has been able to get a word out of him. And now for local news!

O. C. Clisham is the proud father of a boy whose name we do not know as yet.—Alden Crankshaw finds married life much to his liking. He is in the jewelry and repairing business for himself. Your assistant secretary met him on one of his northward sojourneys to Guilford, Maine.—"Boggs" Morrison, Dean Fales, and your assistant secretary, again went on a little cruise this summer and from all that can be learned it was a very good time, but strange to say all are rather non-committal regarding it.—"Bird" Duff is now working for J. Jay Dunn of Ellwood City, Pa., and is leaning toward the mechanical engineering line at present.—R. A. McMerrimen is employed by the Dock Contracting Company on the Broadway subway in New York City. He is a frequent visitor of the Tech club.—The North Carolina Institute has appointed Elden

I. Staples of Wakefield, Mass., as head of the electrical department of the institution.

The plan of devoting certain issues of the REVIEW to definite subjects comes from its able editor, "Ike" Litchfield, and certainly has food for serious thought in it, and we hope also for serious endeavor on the part of our classmates. Those who did not get their letters about foreign affairs in this number may have a place reserved for them in the next, the January issue. This month will be devoted to the work of men who are employed by the state, municipality and the community, either in a remunerative, or service free, capacity. What is meant particularly are the services rendered "in the various towns and cities of the country by our alumni on various committees which, in the aggregate, are accomplishing stupendous results. This need not, of course, be confined to work that is given without compensation," as probably few men of our class can afford such service at present.

For the April REVIEW a reminiscence number is planned. Most of us have our doings at the Institute too fresh in mind to reminisce a great deal, but we sincerely hope that this, as well as the January issue, will be strongly supported.

We regret very much to write of the sudden death of Meyer Levinson by his own hand. He was till recently employed by the American Glue Company at Peabody as a chemist. Last year Levinson remained at the Institute as assistant in the chemical department. Ill health took him to the country for a while and he returned to go with the glue company. There he often complained of melancholia, which was probably the reason for his committing the act which we all deeply deplore.

And now for a few notes to keep up our matrimonial bureau. We quote from the Philadelphia *Star:*

Wellesley College has lost one of the most popular members of its junior class as the result of the elopement and marriage of Miss Marion E. Hopkinson, of North Woburn, with Roy C. Brett. Brett, after spending two years at the Institute, has attended Tufts College for a time.

Miss Francelia Niles Sheldon was married on August 28 to B. P. Crittenden, popularly known to Course II men as Roger T. Main. They are intending to make their permanent residence in New York City.—Miss Florence Thirwell Whittaker was married on September 27, the fiftieth anniversary of her grandmother's wedding, to Linwood D. Faunce, at Mount Vernon, N. Y. Following the wedding trip the couple will live in Mount Vernon.—A. E. Schallenbach was married on September 15 in Dorchester, Mass., to Miss Eunice Allen Shiverick.—Mr. and Mrs. Harold Ward Barker are at home at 364 Bewick avenue, Detroit, Michigan.

Congratulations, men! We are most certainly glad to see the number of benedicts slowly but surely growing, for it is a good sign. We wish you all the best of luck and only hope that you will still find time to drop us a line now and then.

Upon mature consideration, your Secretary Fiske has decided that it is high time to put in a word about himself; so here goes.

Since graduating I have been employed by the firm of Kidder, Peabody & Company, private bankers in Boston and New York. With them not a great deal of note has happened to me until last August, when I was sent to the New York office for a couple of months. Here I have enjoyed several pleasant experiences, chief among them being a visit to Buck Dorrance at Philadelphia. For one all too short, beautiful day I enjoyed with him a rapid succession of tennis, motoring, swimming and meeting charming girls. The country places of New Jersey, its large well-run farms, were new to me and interesting to visit.

Those of you who read these notes are no doubt familiar by this time with the frequent appeals for news, sometimes foreign, sometimes domestic. Domestic here has a dual meaning—*i.e.*, in and about the country and in and about the home. The latter, of course, concerns our social engagements and matrimonial bureau. Your indulgence, please, while I answer my own appeal! My engagement, the culmination of a friendship of many years, to Miss Marie E. Blood of Wellesley, Mass., was announced at the home of her parents on November 6, who that day celebrated their silver wedding. Miss Blood has studied at Wellesley, Rome and in Boston at Miss Garland's school. Her parents and mine are lifelong friends, our fathers being both Tech men, so that I can look forward to a Tech reunion with as much pleasure as anyone.

Long Lan, who has been assistant to Professor Richards in the mining department during the past year, is now with the Juragua Mining Company at Firmeza, Santiago de Cuba, Cuba. His work is mainly along the chemical line and his hours are from 6.30 a. m. to 5.30 p. m., with two hours off for lunch. He reports that the company is very liberal to its employees in providing every modern convenience and in giving a six months' vacation every year.—C. G. Fallon has secured a position with the Henry Souther Company, Hartford, Conn.—J. A. Creighton spent several months in Kentucky at the beginning of the year in connection with some coking tests of Kentucky coal. He is now with the Pennsylvania Steel Company at Steelton, Pa.—Ralph Salisbury sends the following interesting letter:

I was in the big city for a few days last month on my way home; my job kissed me good-bye in June, and I have been doing everything except work this summer.

The battalion of naval militia which I joined last fall went off on the annual cruise in July for two weeks of sailor life on the old battleship *Kearsarge*. There were four hundred of us militiamen and about one hundred and twenty-five regulars aboard; the Brooklyn battalion went along on the sister ship, the *Kentucky*. We steamed down to Chesapeake Bay and up to Baltimore where we were given twenty hours liberty, enough time to see some of the sights of Washington and get a regular bath. Trying to stand up in front of a fire hose squirting a solid bar of salt water at you makes bathing on the deck of a battleship hilarious, but that's all. Five of us made a mistake and broke liberty an hour or more, but as a chief petty-officer was one of the five, nothing happened to us.

For a week we lay down in Tangier Sound under a blistering sun, and stewed and drilled and boiled and swam and punctured the calm waters of the bay with five inch shells that splashed spray all over the targets but didn't rip many holes in them.

Evening was the best time, for then we would have a sing-out on the fore-castle or clear a ring on the superstructure for boxing matches with the regulars. Mornings we turned the hose loose, got out brushes and sand and swabs and hustled around in regular bare-foot sailor fashion manicuring the decks. Even hoisting ashes overboard or getting up in the middle of the night out of a comfortable hammock to go on watch couldn't spoil the enjoyment of the trip.

I was sorry to see the two weeks end, but I had not been in New York a week before I did a "soldier and sailor too" imitation, transferred my allegiance from the navy to the army, and went up to Plattsburgh. The three weeks there were even better than the cruise-time. I never saw a gang of men go after their work as hard or with as much enthusiasm as that thirteen hundred. From the time first call blew till the last man had turned in at night the camp was as busy as an ammunition factory; four hours' drill every morning, optional work in the various branches of the army in the afternoon, shooting on the rifle range—and after supper when it was too dark for drill they gave us lectures. That was when we heard Teddy. And after the lecture the cavalry enthusiasts would gather around a big fire near the barracks and have a talk-fest with the regular cavalry officers. The last ten days of camp we hiked off on manoeuvers with three thousand regulars, fighting sham battles and hiking by day— and shivering in "pup-tents'" at night.

There were about twenty-five Tech men in the camp but our officer-instructors didn't leave us many spare moments to get together in; we did get about ten together one noon.

You can see that my summer has been spent eating, sleeping and drinking war and preparedness; and it has been more than good fun; it is an experience I wouldn't give up for a great deal.

At the present writing I am getting re-acquainted with the family; and have just accepted a position with Darling & Eitel, contractors here in Chicago.

Give my best to any of the fellows you run across, and to yourself for a good time in New York.

Address Changes

P. A. McMenimen, care of Dock Contracting Co., 95 River St., Hoboken, N. J.—A. E. G. Collins, 21 Collingtree Rd., Sydenham, London, S. E.—H. V. Fay, care of Thos. Cook & Sons, Yokohama, Japan.—N. A. Thompson, care of Standard Oil Co. of N. Y., Peking, China.—H. F. Merrill, 2d, Board of Conservancy Works of Kwantung, The Bund, Canton, China.—B. P. Crittenden, 109 W. 94th St., New York City.—Long Lan, care of Juragua Mining Co., Firmeza, Santiago de Cuba, Cuba.—J. A. Creighton, 303 Pine St., Steelton, Pa.—C. P. Lee, care of Copper Queen Mining Co., Box 457, Douglas, Arizona.—C. G. Fallon, care of Henry Souther Co., Hartford, Conn.—L. O. Faunce, 48 N. 9th Ave., Mount Vernon, N. Y.

Right address desired of the following: Paul M. Scherwin; Fong Tel Yel; Augusto D. Caballero.

1915.

WILLIAM B. SPENCER, *Sec.*, 552 Main Street, Medford.
FRANCIS P. SCULLY, *Asst. Sec.*, 1802 Mass. Ave., Cambridge, Mass.

This issue of the REVIEW finds most of us placed in jobs of one sort or another, either temporary, or permanent, to our liking or

not; but we are all looking forward to that time when we shall have graduated to a position with a salary.

A very large number of the "third degree" blanks have been returned and only a brief summary of their contents can be expected at this time. It would take an entire REVIEW to publish all the "dope" which ranges from the most serious to the most ridiculous.

About thirty-five of the fellows are back around the "Stute" instructing or being instructed. Jack Dalton, our genial president, sends in a note saying that he is trying to get graduate "Structures" through his head and a half-dozen others like it. He pleads not guilty to the accusation in the July issue of the REVIEW that he would be an assistant this year. He says:

> I am only a graduate student (?) trying to work hard for once.
> The boys who are back taking just graduate work are, Sandlos, I, Shields, I, Otto Hilbert, II, Henry Nieman, II, and myself, and Easty Weaver, XIV, Coldwell, VI, Nixon, IV, and Neumann, IV. Those who are back as assistants are Howard Thomas, I, Wardle, I, Tisdale, I, Hyneman, I, B. E. Field, V, Allan Abrams, V, and Zephler. "Pirate" Rooney and "Fanny" Freeman are working for their degrees.

To this list we can add, as assistants, P. J. Munn, I, in civil engineering, and Tom Huff, II, who always did like to go in for the high flights is assistant in aeronautical engineering.—Whity Brown, IV, is assistant in mechanical engineering department.—Lucius Aurelius Bigelow, Jr., V, is assistant in organic chemistry, and says his present occupation is both interesting and instructive.—A. S. Dana, VI, is in the Electrical Engineering Research Lab.—"Father" Doane, V, is research assistant in Food Analysis Lab.—A. A. Cook, V, and J. N. Dalton, V, are assistants in chemistry.—Francis Foote is "still hot after two degrees, one in I and one in XI."—C. W. Eddy, II, is taking a combined course in II and VI.—Kebe Toabe, V, likes the "Stute" too well to leave it so soon.—Parm Sabin and Fritz Staub are inveigling the Faculty to give an M. S. in architecture. Parm says:

> It's as lonesome as the ——— around the "Stute," but occasionally see a '15 man and he looks good to yours truly.

V. T. Stewart and Bob Haylett are taking graduate work in course IX.—J. A. Tobey is assistant and student in military science. He worked all last summer as chauffeur and lecturer on the Royal Blue Line Sightseeing autos. We can imagine him shooting his tale of woe at the innocents.—C. W. Whitall is a graduate student in Course VI.—E. C. Walker, 3d, is after his doctor's degree.

For our society column we have the most important announcement to make: Our Mary Elsa Plummer is engaged. She gave no business or occupation but we imagine she must be pretty busy with that hope chest.—Jack Dalton has found the right one, and Les Fletcher is struggling to get the necessary bank account as a draftsman with the Greenfield Tap and Die Company, Greenfield,

Mass.—Red Kimball, II, says "its none of your business," and the "little bird" whispers, "Herman Morse, II, is nearly if not actually engaged to some queen."—Bill Holway, XI, answered, "yes." He is a bridge inspector for the Rhode Island Company, Providence, R. I., but is still looking for a sanitary job. Evidently bridges are too dirty and sooty affairs for his future mistress.—A. H. Bond also is entitled to a place in this column. He is up in Drummondville, Quebec, Canada, a civil engineer with Westinghouse Church Kerr Company of New York. He writes:

Have been up here three months on construction of a $2,000,000 powder plant, due to be finished by Christmas. Then off to Cuba or Alabama, probably. Give my best to Howard Thomas and any of the rest who are still on the job.

The general sentiment seems to be that matrimony is impossible at this early date but a few pioneers are proving that it can be done. N. L. Medhurst, IV, is married and living in Everett where he is production engineer for the New England Structural Company.—F. E. Waters, II, was married in the early part of September to Miss Placida V. Connor of Peabody, Mass. A portion of his letter is below:

Everything went off first rate at the big celebration. We got away as soon as we could and started on what people call a honeymoon. We are still on it. Very soon we expect to move to Philadelphia or somewhere in that vicinity for the Remington Arms Company of Delaware has a new plant at Eddystone, Pa. That occupation is just a teaser, probably another month will bring a different one. Howard Wilkins, II, and I are "whiling away our time" up here (Ilion, N. Y.). All we have to do is to hang around and collect our pay. After we move I imagine there will be something doing, however.

Last Sunday we met Dwight Stump and Sammy Buck wandering around Prospect Point, Niagara.

Someone says Charlie Wareham of Swampscott did it, too, do you know anything about it? Everybody's happy, that's all.

How about it Charlie?—F. S. Gove, XIV, was married June 7, 1915, to Miss Clarissa E. Hathaway of 74 Purchase street, Newburyport, Mass. He has been with the Western Chemical Company of Denver, Colo., since March 21, 1915.—Dong Baker, VI, and Ken Boynton, VI, are taking the student course with the Western Electric Company, Chicago, Ill. Ken says that he has been looking for an engaging girl ever since coming to Chicago but hasn't found one yet.—By the time this number of the REVIEW is off the press Loring Hall, I, will probably have reached his destination in the Far East. He has gone to represent the Standard Oil Company in Central China. Under the agreement with the S. O. Co. it will be three years before he returns again to the United States. It is a long way off and we all wish him the best of success.—A note has been received from Gabe Hilton, III, down in Mascot, Tennessee. He is employed by the American Zinc Company. He writes:

MacDonald, '13, has loaned me his REVIEW and I have just read the article on the class news numbers, asking for letters from foreign lands. While Mascot could

hardly be called such, being in Tennessee, yet it is God-forsaken enough to be, especially at this time when from force of habit I ought to be on my way to Boston.

I landed down here on August first after having spent six weeks giving the girls in Oshkosh a treat. Some come down, but to my surprise and pleasure I found Willis, '15, here ahead of me. It didn't take long for the newness of the place to wear off, there being nothing here but the plant, a store, and a pool hall. So I wandered to Knoxville, which I had forgotten to say was only fourteen miles away, for excitement. Said excitement to consist of the movies, Tennessee being a dry state as well as the possessor of an anti-cigarette law. In Knoxville I ran into the G. M. and "me and him being pretty good pals by this time" he suggested that we go to the country club. Easy money, but I almost passed out (no, don't get excited, this is a dry state) when, surrounded by a bevy of the most beauteous maidens, whom should I see but Fritz Staub! No, I wasn't surrounded; he was, and just when I was bemoaning the fact that I didn't know a soul within a thousand miles! Talk about your southern beauties! I should say so, and Fritz saw to it that I met every one of them, and life was once more worth living.

Remember me to the fellows in Boston and start boosting for a big reunion 'cause I'll be there if I have to walk.

J. S. Gallagher is in Port Arthur, Texas, with the Texas Company. He says:

I have a job with an oil company without taking the S. O. course offered just before school finished. Though they let me sign my name engineer, they don't let me run much of the business; the job isn't as important as the title.

We are quite glad Gallagher and Loring are not apt to meet, they might start something.—Parry Kellar, II, our esteemed soldier, is a mechanical engineer for Fayette R. Plumb, Inc., Philadelphia, Pa.—L. W. Prescott, II, is making stove polish out in Battle Creek, Mich.—Dave Rogers, II, is refrigeration engineer for H. W. Johns Manville Company, Cleveland, Ohio.—Walt Rivers sent a very interesting letter from Salt Lake City, as follows:

The notice was forwarded from Los Angeles and I just got it today. The past few days I've been studying up on heating and ventilating for I have a steam-heating plant to design. Don't know whether the blame thing will run, or blow up, but will have to take a chance.

I designed the building and have tried my hand at all the jobs I could find around there to do from ordinary lunky to boss. It is a three-story brick, 40 x 155 foot building and believe me I'm some busy. Finished laying the sheeting on the roof today and expect to start laying on the roofing the day after tomorrow. It sure has been some experience—all the way from a fight with a drunken wop to buying materials.

Have also torn down two buildings—a house of seven rooms and a factory building 40 x 100 feet which had been condemned because the foundation on one side dropped a foot or so. Haven't killed any one yet, which is rather marvelous but on the latter job one of the men fell from the second story to the ground and busted three ribs. That cost me $25 which was easy $8.33⅓ a rib.

Drop me a line sometime and let me know how you are getting along. If you run into Everett Brigham ask him for me how Evil Hair is.

Monk Ward, I, writes from Newark, Ohio:

I suppose you received my $1.50 [We did.] I suppose you turned over the dollar and got drunk on the fifty cents. Is Dayton the nearest city for the M. I. T. Alumni Association?

Occupation, assistant resident engineer in charge of 8½ miles of state highway work, one mile of concrete road and 7½ miles of bituminous macadam. Not engaged but would like to be; not married but hope to be.

Gene Place, VI, has been in Newark, N. J., working for the Public Service Electric Company on their new Essex station. He started as a helper, but he was a marked man, for soon he was put in entire charge of all electrical material that comes into the station.—We have had two letters from Walter Hanchett, parts of which tell of the good times a crowd of the Course II fellows are having out in Akron, O.:

There are five Course II men now here in Akron, and all working for the Goodyear Tire & Rubber Company. They are H. E. Morse, "Spike" Wheeler, "Jack" Holmes, A. E. B. Hall and myself. Heman, Al, and I have a suite together. Spike and Jack are rooming together at 27 So. Union street, where Treat, Snow, and Keith, '14, also live and where we all take our meals.

Saturday, July 10, the Technology Club of Northern Ohio had a fine outing at a country club twenty miles from Akron. Fifty-two members present, about half of them Goodyear men. I suppose it will be reported in the REVIEW. Last Friday night, the Harvard Club of Akron gave a dinner to the Tech Club at the University Club. So you see the place is very homelike for a Tech man, a regular Tech settlement.

Two '15 men, also of Course II, have dropped in at Akron to say hello! Don Hooper stopped off on his way back from the fairs. Dave Rogers came down and spent Sunday with us. He is happily located with the Peerless Motor Company, in Cleveland, thirty miles north of here. He brought us news that Houser, II, is with the Cadillac Company of Detroit and that Freddie Hurlbutt is with the du Pont Powder Company.

Nemo Leeb, VI, who used to sell more tickets, etc., for the student activities than five other men is using his line of talk to earn his living in New York.—Dave Hughes is working for the Electrical Testing Laboratories in New York on illumination and photometric work. Dave sent a United Cigar Stores' certificate with his dues. We wonder if that is a present for good behavior or if he just thinks we are saving them. Dave sent in some valuable "dope" as follows:

Nemo is an office boy or something for R. M. Grant & Company, Bankers. He will write as soon as he gets the 100 pennies saved up. He will also tell you all about Bob Wells' (VI) wedding in September at which he was an usher.

I would suggest that a good slogan for our class would be:

Meet me at the Five Year Reunion, Cambridge, 1920.

You could have it on your stationery and always have it at the head of your space in the REVIEW.

The last news from G. A. Palmer, II, was received in July. He must be nearly buried in work because he said:

Just a note to give you my address. Am with the Lackawanna Steel Company, foreman in benzole plant. Busy as old Ned just now as I am on a 13-hour night shift, 7 nights a week. Go on day shift, 11 hours, next week.

R. B. Cady, II, wants to know if there are any of the fellows working near Saratoga Springs, N. Y. He is with the Geo. F.

Shelvin Manufacturing Company.—Dodo Dodd, II, is with the Van Houten Cocoa Company, Newark, N. J. He writes:

> Just now I'm learning to run a gas producer and engine. I wish to gracious Tech had such an outfit because it's rather awkward to know nothing more than is given in the present text-books.

Bill Smith, I, is general assistant in an engineer's office in Dedham.—Phil Small, IV, is located with Frank B. Meade, '93, architect, Cleveland, Ohio.—G. H. Warfield, I, and C. H. Durkee, II, are assistant engineers with the Westinghouse Church Kerr Company, New York City.—L. H. Chellman, I, is junior assistant engineer with the Public Service Commission, New York.—C. W. Noyes, VI, says that he expects to take the General Electric Company's apprentice course but at the time of his writing had charge of a sub-station.—We are all very sorry that H. E. Buck could not take his final exams; but he has landed a job as chemist in a soap factory, Philadelphia.

Others of the fellows whom we have heard from in time to get their addresses into these notes are:

Foss Purinton, II, engineer for Hoffecker Speedometer Co., Park Sq., Boston.—Boggsie Morrison, II, salesman for the Detroit Steel Products Co., Boston.—Eddie Kingsbury, II, making toys, Wilkins Toy Co., Keene, N. H.—Jake Ginsburg, II, U. S. Cartridge Co., Lowell.—Bob Lewis, II, mechanical engineer at Dolphin Jute Mills, Paterson, N. J.—Speed Swift, II, student of Flivvers, Ford Motor Co., Detroit, Mich.—Chick Foule, IV, architectural draftsman, Boston.—Les Heath, V, Chemist, B. F. Sturtevant Co., Hyde Park, Mass.—L. W. Mason, V, Southern Cotton Oil Co., Bayonne, N. J.—D. C. Ramsay, XIII, draftsman, Lake Torpedo Boat Co., Bridgeport, Conn.—Joe Knowles, V, Atlantic Sugar Refineries, St. John, N. B.—Larry Travis, VI, Statistical Dept., Commonwealth Edison Co., Chicago, Ill.—Hank Brackett, X, laboratory assistant, New York.—Jake Foster, X, engineer, Underwriters Laboratories, Boston.—Larry Landers, X, chemical engineer, Am. Rubber Co., E. Cambridge.—Ben Hurwitz, X, chemical engineer, Ruby Kid Co., Camden, N. Y.—Pete Codwise, still at home.—W. E. Brown, VII, instructor, Harvard Medical School.—F. J. Vogel, VI, Electrical Testing Laboratories, New York.—Waffie Curtis, VI, draftsman, Hopkins & Allen Arms Co., Norwich, Conn.—Dan Maconi, civil engineer, Aberthaw Construction Co., New Haven, Conn.—Budy Nye, Aberthaw Construction Co., Quincy, Mass.—E. J. Casselman, X, assistant chemist, International Paper Co., Glens Falls, N. Y.—Jack Little, X, chemist at du Pont Powder Works, Wilmington, Delaware.—Peter Massuci, VII, bacteriologist, State Board of Health, Iowa City, Ia.—W. C. Whitman, II, chemist and assistant superintendent, for H. A. Johnson Co., Boston.

Do not forget the special features in the class news for January and April. Send in anything you can even if it is only a word. The class news in the January REVIEW will be devoted especially to the work Tech men are doing for the state, municipality, and community; more especially with reference to voluntary service. This also could include men in public service who are doing investigating or research work which will result directly in benefit to mankind.

The class news for April will feature any entertaining reminiscences of Institute life. Think up all the funny ones; there surely was enough amusement in our career to make the most sober old grad. split his sides.

A slight misunderstanding still exists concerning the Alumni Association and class affairs. Send your class dues ($1.00) to the class secretary. Your alumni dues ($2.00) should be sent to Walter Humphreys, M. I. T. It includes the subscription to the REVIEW. Also any member of the class is eligible to membership in the Alumni Association whether he has been graduated or not.